Creel Census and Biological Investigation of Noell Lake, Campbell Lake and Campbell Creek, Northwest Territories

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Department of Fisheries and Oceans
Winnipeg, Manitoba R3T 2N6

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ABSTRACT

Read, C.J., and M.M. Roberge. 1986. Creel census and biological investigation of Noell Lake, Campbell Lake and Campbell Creek, Northwest Territories. Can. Data Rep. Fish. Aquat. Sci. 571: iv + 33 p.

A creel census, experimental gillnetting and biological sampling program was conducted on Noell Lake in 1982 and on Campbell Lake and Campbell Creek in 1983. A tagging program was also carried out on Campbell Lake and Campbell Creek. Sport fishing harvest and biological data are presented. Harvest data includes number of fish kept and released and number of fish caught per angler-hour and per angler. Biological data includes length, weight, age and maturity characteristics of the fish species caught. Water analysis and dissolved oxygen profiles are also presented.

Key words: angling; whitefish, broad; catch/effort; catch composition; gillnets; whitefish, lake; pike, northern; sport fishing statistics.

RÉSUMÉ

Read, C.J., and M.M. Roberge. 1986. Creel census and biological investigation of Noell Lake, Campbell Lake and Campbell Creek, Northwest Territories. Can. Data Rep. Fish. Aquat. Sci. 571: iv + 33 p.

On a fait un recensement du pêche sportive, on a fait une pêche expérimentale au filet maillant et on a appliqué un programme d'échantillonnage biologique dans le lac Noell en 1982 et dans le lac et le ruisseau Campbell en 1983; un programme d'étiquetage a également été mené dans le lac et le ruisseau Campbell. Des données sur les captures par les pêcheurs sportifs et des données biologiques sont présentées. Parmi les données sur les captures, il y a le nombre de poissons pris et relâchés et le nombre de poissons pris par pêcheur par heure et par pêcheur. Les données biologiques comprennent la détermination de la longueur, du poids et de l'âge ainsi que les caractéristiques de maturité des poissons des espèces capturées. Sont également présentés les profils d'analyse de l'eau et de l'oxygène dissous.

Mots-clés: Grand brochet; composition des prises; grand corégone; corégone tschir; filets maillants; pêche à la ligne; prises/effort; statistiques de pêche sportive.

INTRODUCTION

It has been apparent over the past few years that with the completion of the Dempster Highway and the increasing industrial development in the Mackenzie Delta area, Northwest Territories, that additional fishing pressure would be placed on the lakes, rivers and streams, in particular, in the Inuvik area. Fishing pressure would be in the form of itinerant fishermen as well as possible lodge development. Unfortunately, data on the various fish species inhabiting the lakes, rivers and streams in the Inuvik area are minimal. Therefore in 1982, the Department of Fisheries and Oceans (DFO) began a multi-year program to obtain information on the current fishing pressure and to collect biological data on the sport fish species in the Inuvik area. The major lakes and rivers to be surveyed include Campbell, Noell, Sitidgi and Husky lakes and the Rengleng River.

This report presents information collected in 1982 and 1983 on the sport fishery harvest and biological state of the fish species from Noell and Campbell lakes, as well as from Campbell Creek.

STUDY AREA

Noell Lake (68°32'N, 133°34'W) is located approximately 15 km northeast of Inuvik, Northwest Territories (Fig. 1). The lake has a maximum length of 6.8 km, a maximum width of 5.5 km and a total surface area of approximately 3 000 ha. The one outflow, Jimmy Creek, flows north from Noell Lake into Jimmy Lake. The topography surrounding Noell Lake is rolling tundra with dense clumps of low bushes along the many dry creek beds that feed into the lake. The entire lake is surrounded by hills forming a ring dike around the lake.

Campbell Lake (68°12'N, 133°48'W) is situated southeast of Inuvik, approximately 16 km by air and 30 km by road (Dempster Hwy) (Fig. 1). The lake has a maximum length of 21 km, a maximum width of 2 km and a total surface area of approximately 4 000 ha. The south end of the lake is quite shallow; in fact the south shore of the lake recedes very noticeably as the summer progresses. There is a major outflow at the north end of the lake, known as Campbell Creek (Fig. 4). The highway crosses Campbell Creek approximately 1.5 km upstream from Campbell Lake and at this site there is a Territorial picnic site with a boat launch.

MATERIALS AND METHODS

CREEL CENSUS

DFO personnel conducted a creel census on Noell Lake from 2 August to 17 August 1982 and a partial creel census on Campbell Creek from 4 June to 17 July 1983. Anglers were asked as to how many fish they caught, released and kept (including fish eaten as shorelunch) by species as well as the number of hours spent fishing. When possible, the retained catch was sampled for length, weight, ageing structures (otolith, scale and/or fin sample) and state of maturity.

EXPERIMENTAL GILLNETTING

Experimental gillnetting was carried out at nine locations on Noell Lake in 1982 (Fig. 2) and at thirteen locations on Campbell Lake in 1983 (Fig. 4). Standard gangs composed of 50 m lengths each of 38, 64, 89, 114 and 139 mm mesh (stretched measure) nylon gillnets were used. Catches were recorded by site number, mesh size and species. All fish were sampled for later biological analysis. Some active and unharmed northern pike caught in the nets on Campbell Lake were measured for fork length, tagged and released.

Scientific names of all fish species caught followed Scott and Crossman (1973) as follows: lake trout, Salvelinus namaycush (Walbaum); lake whitefish, Coregonus clupeaformis (Mitchill); northern pike, Esox lucius (Linnaeus); cisco, Coregonus sp.; round whitefish, Prosopium cylindraceum (Pallas); and burbot, Lota lota (Linnaeus).

TAGGING

No fish were tagged from Noell Lake. Northern pike tagged from Campbell Creek were caught by angling while those pike tagged from Campbell Lake were caught by experimental gillnets and trap nets as well as by angling.

The fish to be tagged were placed in a measuring trough to obtain fork length and to secure the fish while a tag was being inserted. White Floy (spaghetti) tags containing a reference number and return address were attached using a Dennison tagging gun. Tags were inserted in the left side of the fish at the base of the dorsal fin and anchored between the pterigiophores. Fish were then released.

BIOLOGICAL SAMPLING

Fish caught by experimental gillnets were sampled for fork length (±1 mm), round weight (±50 g), aging structures (otoliths/scales/fins), sex and stage of maturity. Sex and the relative stage of maturity were determined by examination of the gonads and coded according to the stages described in Appendix 3.

Sagittal otoliths were taken from lake trout and burbot and stored dry in coin envelopes. In the laboratory, the otoliths were selectively ground on a carborundum stone and placed in a cleaning solution of 3:1 benzyl benzoate and methyl salicylate before being read under a binocular dissecting microscope (x30). A reflecting light source against a black background was used to bring out the annual growth zones which were counted to determine the ages.

Scales were taken from round whitefish as described by Hatfield et al. (1972) and stored

dry in coin envelopes. In the laboratory, scales were placed between glass slides and the annual rings counted with the aid of an Eberbach microprojector (x40).

Fin rays were taken from northern pike, whitefish and cisco and stored as described by Chilton and Beamish (1982). The ages determined by interpretation of the fin ray sections are not included in this report.

Ovaries were removed from a sample of mature lake trout from Noell Lake, 1982. The ova from both ovaries were counted in the field to provide a measure of fecundity.

WATER ANALYSIS

Two water samples were taken from both Noell and Campbell lakes. The water samples were taken according to the procedure outlined by Stainton et al. (1977) and analyzed by the Analytical Unit, DFO, Winnipeg, Manitoba. Dissolved oxygen readings were obtained from Noell Lake using a hach kit while a digital oxygen meter (YSI Model 58) was used to obtain readings from Campbell Lake.

DEPTH SOUNDINGS

Noell Lake was sounded using a Lowrance Model D51 depth sounder. A total of 9 transects were made. Depth soundings were plotted and bathymetric contours were drawn at 5 m intervals.

DATA ANALYSIS

Data were analyzed using an Amdahl 5850 computer. The Statistical Analysis System (1982) was used to generate length, weight, sex, age and maturity summaries and to perform basic calculations and statistical analysis.

Weight-length relationships were calculated using least squares regression analysis on logarithmic transformations of fork length and round weights. The relationship is described by the following equation:

$$\log_{10} W = a + b\ (\log_{10} L)$$

where W = weight in grams
L = fork length in millimeters

Relative condition factor (K), a measure of plumpness of a fish, was determined using the formula:

$$K = \frac{W \times 10^5}{L^3}$$

where W = weight in grams
L = fork length in millimeters

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Table 1. Creel census summary of Noell Lake, 1982.

Date (D/M)	No. Anglers		Percent	L. Trout			N. Pike			Hours Fished	No. Fish Caught	
	Interviewed	Not Interviewed	Interviewed	C[1]	R[2]	K[3]	C	R	K		Per Angler	Per Angler-Hour
7/8	3	0	100.0	5	0	5	-	-	-	10.5	1.7	0.5
8/8	3	0	100.0	-	-	-	1	0	1	12.0	0.3	0.1
16/8	2	0	100.0	3	0	3	-	-	-	3.0	1.5	1.0
17/8	2	0	100.0	2	0	2	-	-	-	3.0	1.0	0.7
Total	10	0	100.0	10	0	10	1	0	1	28.5		
Mean											2.2	0.4
Percent kept				100.00			100.00					
No. caught per angler-hour				0.35			0.04					
No. caught per angler				2.00			0.20					

[1]Number caught.
[2]Number released.
[3]Number kept.

Table 2. Catch and catch per unit effort (CPE) data for fish caught by experimental gillnets from Noell Lake, 1982.

		Mesh Size (mm)					Total	CPE[1]
		38	64	89	114	139		
Lake trout	No.	66	50	63	57	12	248	12.4
	%	26.6	20.2	25.4	23.0	4.9	48.0	
Lake whitefish	No.	25	20	32	39	28	144	7.2
	%	17.4	13.9	22.2	27.1	19.4	27.9	
Cisco	No.	57	3	-	-	-	60	3.0
	%	95.0	5.0	-	-	-	11.6	
Round whitefish	No.	23	20	-	-	-	43	2.2
	%	53.5	46.5	-	-	-	8.3	
Burbot	No.	-	-	-	-	1	1	<0.1
	%	-	-	-	-	100.0	0.2	
Northern pike	No.	-	4	16	1	-	21	1.1
	%	-	19.1	76.2	4.8	-	4.1	
Total	No.	171	97	111	97	41	517	25.9
	%	33.1	18.8	21.5	18.8	7.9		

[1]No. fish per 100 m of gillnet per 24 h.

Table 3. Biological data by length interval for lake trout caught by experimental gillnets, Noell Lake, 1982.

LENGTH INTERVAL (MM)	MALES						FEMALES						COMBINED					
		LENGTH(MM)	WEIGHT(G)			%		LENGTH(MM)	WEIGHT(G)			%		LENGTH(MM)	WEIGHT(G)			%
	N	MEAN	MEAN	SD	K	MAT	N	MEAN	MEAN	SD	K	MAT	N	MEAN	MEAN	SD	K	MAT
175	3	192	100	0	1.42	0	2	191	100	0	1.44	0	5	191	100	0	1.43	0
200	1	200	100	-	1.25	0	1	200	100	-	1.25	0	3	202	100	0	1.21	0
225	1	235	150	-	1.16	0	3	229	200	87	1.66	0	4	231	188	75	1.53	0
325	-	-	-	-	-	-	1	343	450	-	1.12	100	1	343	450	-	1.12	100
375	1	380	600	-	1.09	0	1	383	700	-	1.25	0	2	382	650	71	1.17	0
400	4	412	750	58	1.08	50	4	409	688	48	1.01	75	8	410	719	59	1.04	63
425	13	441	969	105	1.13	85	8	434	900	125	1.11	88	22	438	941	113	1.12	86
450	27	466	1107	87	1.10	96	20	462	1093	115	1.11	90	47	464	1101	99	1.10	94
475	32	485	1228	83	1.08	97	28	487	1245	162	1.08	100	60	486	1236	125	1.08	98
500	27	512	1407	147	1.05	96	13	512	1431	130	1.07	100	40	512	1415	141	1.05	98
525	11	532	1559	245	1.03	100	10	534	1760	406	1.15	90	21	533	1655	339	1.09	95
550	3	561	1683	592	0.95	67	2	573	2100	283	1.12	100	5	566	1850	497	1.02	80
575	3	580	2117	275	1.08	100	5	587	2180	470	1.07	100	8	584	2156	386	1.08	100
600	4	616	2500	216	1.07	100	3	607	2667	321	1.19	100	7	612	2571	256	1.12	100
625	2	633	2650	212	1.05	100	2	642	3725	672	1.41	100	4	637	3188	742	1.23	100
650	1	651	3150	-	1.14	100	2	662	3850	354	1.33	100	3	658	3617	475	1.27	100
675	3	683	4733	751	1.48	100	1	685	5100	-	1.59	100	4	684	4825	640	1.51	100
750	1	762	5600	-	1.27	100	1	762	5100	-	1.15	100	2	762	5350	354	1.21	100
825	-	-	-	-	-	-	1	836	7100	-	1.22	100	1	836	7100	-	1.22	100
850	1	862	10400	-	1.62	100	-	-	-	-	-	-	1	862	10400	-	1.62	100
TOTAL	138						108						248					
MEAN		493	1458	1097	1.10			488	1486	1032	1.14			490	1462	1067	1.11	

Table 4. Biological data by age group for lake trout caught by experimental gillnets, Noell Lake, 1982.

AGE (YR)	MALES							FEMALES							COMBINED						
		LENGTH(MM)		WEIGHT(G)			%		LENGTH(MM)		WEIGHT(G)			%		LENGTH(MM)		WEIGHT(G)			%
	N	MEAN	SD	MEAN	SD	K	MAT	N	MEAN	SD	MEAN	SD	K	MAT	N	MEAN	SD	MEAN	SD	K	MAT
5	3	196	4.6	100	0	1.33	0	1	195	-	100	-	1.35	0	4	196	3.8	100	0	1.34	0
6	2	211	33.9	125	35	1.34	0	3	215	24.6	133	29	1.34	0	6	213	22.0	125	27	1.30	0
7	-	-	-	-	-	-	-	1	229	-	300	-	2.50	0	1	229	-	300	-	2.50	0
8	1	480	-	1300	-	1.18	100	1	343	-	450	-	1.12	100	2	412	96.9	875	601	1.15	100
9	3	404	20.8	700	100	1.06	33	3	402	16.8	683	29	1.06	33	6	403	17.0	692	66	1.06	33
10	2	407	9.9	750	71	1.11	50	1	432	-	800	-	0.99	0	3	415	16.0	767	58	1.07	33
11	1	425	-	750	-	0.98	0	-	-	-	-	-	-	-	1	425	-	750	-	0.98	0
12	2	436	9.9	950	0	1.15	100	1	476	-	1200	-	1.11	100	3	449	24.1	1033	144	1.14	100
13	2	449	4.2	975	35	1.08	100	8	473	22.6	1088	116	1.03	88	10	468	22.4	1065	113	1.04	90
14	9	480	38.8	1128	203	1.03	78	10	462	45.9	1125	344	1.11	100	19	471	42.5	1126	279	1.07	89
15	16	482	23.0	1197	177	1.07	100	14	491	38.2	1296	291	1.08	93	30	486	30.8	1243	238	1.08	97
16	22	487	31.6	1277	251	1.10	100	8	483	29.1	1188	230	1.05	100	31	484	31.0	1242	249	1.08	100
17	19	490	24.8	1297	225	1.10	100	6	538	89.5	2175	1551	1.23	83	25	501	50.7	1508	828	1.13	96
18	9	497	49.2	1367	474	1.09	100	9	490	31.0	1333	200	1.14	100	18	494	40.1	1350	354	1.11	100
19	2	550	31.1	1700	424	1.01	50	4	568	54.3	2375	1274	1.21	100	6	562	45.3	2150	1064	1.14	83
20	2	491	12.0	1250	71	1.06	100	4	509	18.5	1463	75	1.11	100	6	503	18.1	1392	128	1.10	100
21	1	487	-	1300	-	1.13	100	1	478	-	1000	-	0.92	100	2	483	6.4	1150	212	1.02	100
22	5	483	27.1	1260	156	1.12	100	3	482	8.7	1200	50	1.07	100	8	483	21.0	1238	125	1.10	100
23	4	481	29.3	1213	144	1.09	75	3	472	6.8	1133	153	1.07	100	7	477	21.5	1179	141	1.09	86
24	4	510	15.6	1413	165	1.06	100	4	515	71.4	1763	934	1.22	100	8	513	47.9	1588	648	1.14	100
25	1	623	-	2700	-	1.12	100	-	-	-	-	-	-	-	1	623	-	2700	-	1.12	100
26	-	-	-	-	-	-	-	1	612	-	2800	-	1.22	100	1	612	-	2800	-	1.22	100
27	1	602	-	2200	-	1.01	100	3	533	40.4	1500	346	0.98	100	4	550	47.8	1675	450	0.99	100
28	2	549	54.4	1800	424	1.08	100	1	663	-	4100	-	1.41	100	3	587	76.5	2567	1361	1.19	100
29	2	520	38.9	1400	424	0.98	100	1	487	-	1100	-	0.95	100	3	509	33.3	1300	346	0.97	100
30	3	560	77.2	1967	839	1.07	100	2	598	6.4	2800	141	1.31	100	5	575	58.4	2300	752	1.16	100
31	3	560	68.7	1833	839	1.00	100	3	611	195	3167	3408	1.05	100	6	585	134	2500	2337	1.02	100
32	3	572	96.1	2467	1419	1.22	67	2	580	114	2450	1626	1.15	100	5	575	88.7	2460	1292	1.19	80
33	2	685	250	5850	6435	1.31	100	1	575	-	1650	-	0.87	100	3	648	188	4450	5156	1.16	100
34	3	505	32.7	1200	173	0.93	100	1	762	-	5100	-	1.15	100	4	569	131	2175	1955	0.99	100
35	-	-	-	-	-	-	-	1	641	-	3250	-	1.23	100	1	641	-	3250	-	1.23	100
36	1	682	-	4700	-	1.48	100	1	537	-	2000	-	1.29	100	2	610	103	3350	1909	1.39	100
37	1	762	-	5600	-	1.27	100	-	-	-	-	-	-	-	1	762	-	5600	-	1.27	100
TOTAL	131							102							235						
MEAN		488	85	1405	1052	1.10			491	96.4	1499	1049	1.13			488	91.6	1438	1049	1.11	
MEAN AGE	18.2							18.2							18.3						

Table 5. Biological data by length interval for lake whitefish caught by experimental gillnets, Noell Lake, 1982.

LENGTH INTERVAL (MM)	MALES						FEMALES						COMBINED					
		LENGTH(MM)	WEIGHT(G)			%		LENGTH(MM)	WEIGHT(G)			%		LENGTH(MM)	WEIGHT(G)			%
	N	MEAN	MEAN	SD	K	MAT	N	MEAN	MEAN	SD	K	MAT	N	MEAN	MEAN	SD	K	MAT
170	-	-	-	-	-	-	2	177	75	35	1.39	0	2	177	75	35	1.39	0
180	2	187	100	0	1.53	0	3	185	100	0	1.59	0	5	186	100	0	1.57	0
190	2	195	125	35	1.69	0	1	196	100	-	1.33	0	3	195	117	29	1.57	0
200	3	206	117	29	1.33	0	4	203	100	0	1.19	0	7	204	107	19	1.25	0
210	2	213	150	0	1.56	0	-	-	-	-	-	-	2	213	150	0	1.56	0
230	1	238	200	-	1.48	0	-	-	-	-	-	-	1	238	200	-	1.48	0
400	-	-	-	-	-	-	2	407	1050	71	1.56	50	2	407	1050	71	1.56	50
410	1	410	1300	-	1.89	0	1	418	1150	-	1.57	100	2	414	1225	106	1.73	50
420	1	428	1100	-	1.40	100	-	-	-	-	-	-	1	428	1100	-	1.40	100
430	2	432	1300	141	1.61	100	-	-	-	-	-	-	2	432	1300	141	1.61	100
440	-	-	-	-	-	-	2	440	1450	71	1.70	100	2	440	1450	71	1.70	100
450	-	-	-	-	-	-	3	453	1650	87	1.78	100	3	453	1650	87	1.78	100
460	5	464	1600	141	1.60	100	-	-	-	-	-	-	5	464	1600	141	1.60	100
470	3	474	1783	144	1.68	100	-	-	-	-	-	-	3	474	1783	144	1.68	100
480	2	481	1850	71	1.66	100	1	483	2000	-	1.77	100	3	482	1900	100	1.70	100
490	1	490	2050	-	1.74	100	1	495	2150	-	1.77	100	2	493	2100	71	1.76	100
500	6	505	2183	160	1.70	100	-	-	-	-	-	-	6	505	2183	160	1.70	100
510	4	513	2250	196	1.67	100	3	513	2367	202	1.76	100	7	513	2300	191	1.70	100
520	3	523	2300	100	1.61	100	3	526	2633	126	1.81	100	6	524	2467	209	1.71	100
530	7	534	2529	187	1.66	100	7	534	2821	364	1.85	100	14	534	2675	317	1.75	100
540	7	546	2893	406	1.78	100	8	544	2950	222	1.83	100	15	545	2923	310	1.81	100
550	3	556	2850	150	1.66	100	4	556	3313	442	1.94	100	7	556	3114	408	1.82	100
560	2	563	3150	71	1.77	100	2	565	3325	389	1.85	100	4	564	3238	250	1.81	100
570	6	574	3458	309	1.83	100	2	572	3150	212	1.69	100	8	573	3381	308	1.79	100
580	3	586	2917	988	1.45	100	5	582	3130	444	1.59	100	8	584	3050	635	1.53	100
590	4	592	3538	125	1.71	100	7	593	3479	308	1.67	100	11	592	3500	250	1.68	100
600	2	600	3575	318	1.66	100	2	607	4050	71	1.82	100	4	603	3813	333	1.74	100
610	1	612	3700	-	1.61	100	1	611	3000	-	1.32	100	2	612	3350	495	1.46	100
620	1	627	4500	-	1.83	100	2	621	3850	354	1.61	100	3	623	4067	451	1.68	100
630	2	632	4550	283	1.80	100	-	-	-	-	-	-	2	632	4550	283	1.80	100
640	-	-	-	-	-	-	1	645	4100	-	1.53	100	1	645	4100	-	1.53	100
670	-	-	-	-	-	-	1	674	4600	-	1.50	100	1	674	4600	-	1.50	100
TOTAL	76						68						144					
MEAN		490	2307	1157	1.66			493	2474	1245	1.68			491	2386	1198	1.67	

Table 6. Biological data by age group for lake whitefish caught by experimental gillnets, Noell Lake, 1982.

AGE (YR)	MALES N	MALES LENGTH(MM) MEAN	MALES LENGTH(MM) SD	MALES WEIGHT(G) MEAN	MALES WEIGHT(G) SD	MALES K	MALES % MAT	FEMALES N	FEMALES LENGTH(MM) MEAN	FEMALES LENGTH(MM) SD	FEMALES WEIGHT(G) MEAN	FEMALES WEIGHT(G) SD	FEMALES K	FEMALES % MAT	COMBINED N	COMBINED LENGTH(MM) MEAN	COMBINED LENGTH(MM) SD	COMBINED WEIGHT(G) MEAN	COMBINED WEIGHT(G) SD	COMBINED K	COMBINED % MAT
3	9	201	10.1	122	26	1.51	0	10	192	11.5	95	16	1.36	0	19	196	11.6	108	25	1.43	0
4	1	238	-	200	-	1.48	0	-	-	-	-	-	-	-	1	238	-	200	-	1.48	0
9	1	533	-	2550	-	1.68	100	1	495	-	2150	-	1.77	100	2	514	26.9	2350	283	1.73	100
10	2	483	71.4	1875	955	1.59	100	2	413	7.8	1125	35	1.60	100	4	448	57.9	1500	701	1.59	100
11	5	470	40.5	1760	462	1.68	80	6	450	34.9	1608	463	1.73	83	11	459	37.1	1677	446	1.70	82
12	8	470	29.0	1706	334	1.62	100	5	533	46.3	2600	686	1.70	100	13	495	47.2	2050	654	1.65	100
13	4	491	17.7	2013	217	1.70	100	1	548	-	2950	-	1.79	100	5	502	29.9	2200	460	1.72	100
14	9	524	39.2	2394	574	1.64	100	4	552	16.6	2938	48	1.75	100	13	533	35.6	2562	537	1.67	100
15	6	557	19.1	3117	461	1.79	100	10	547	40.4	3100	724	1.88	100	16	551	33.6	3106	621	1.84	100
16	9	554	45.6	2867	820	1.68	100	7	575	22.5	3300	477	1.73	100	16	563	37.8	3056	706	1.70	100
17	8	553	27.9	2856	406	1.68	100	9	580	32.5	3256	310	1.68	100	17	567	32.5	3068	403	1.68	100
18	4	587	37.1	3725	805	1.82	100	6	563	30.4	3025	390	1.70	100	10	572	33.5	3305	656	1.75	100
19	2	574	26.2	3200	707	1.68	100	-	-	-	-	-	-	-	2	574	26.2	3200	707	1.68	100
20	3	592	30.2	3983	501	1.91	100	3	605	65.0	3817	922	1.72	100	6	599	45.8	3900	670	1.82	100
21	1	592	-	3550	-	1.71	100	1	645	-	4100	-	1.53	100	2	619	37.5	3825	389	1.62	100
22	1	612	-	3700	-	1.61	100	-	-	-	-	-	-	-	1	612	-	3700	-	1.61	100
TOTAL	73							65							138						
MEAN		487	124	2295	1174	1.67			491	139.6	2458	1264	1.68			489	130.9	2372	1216	1.67	
MEAN AGE		13.2							13.2							13.3					

Table 7. Biological data by length interval for burbot caught by experimental gillnets, Noell Lake, 1982.

LENGTH INTERVAL (MM)	MALES N	MALES LENGTH(MM) MEAN	MALES WEIGHT(G) MEAN	MALES WEIGHT(G) SD	MALES K	MALES % MAT	FEMALES N	FEMALES LENGTH(MM) MEAN	FEMALES WEIGHT(G) MEAN	FEMALES WEIGHT(G) SD	FEMALES K	FEMALES % MAT	COMBINED N	COMBINED LENGTH(MM) MEAN	COMBINED WEIGHT(G) MEAN	COMBINED WEIGHT(G) SD	COMBINED K	COMBINED % MAT
670	-	-	-	-	-	-	1	678	2500	-	0.80	100	1	678	2500	-	0.80	100
TOTAL	0						1						1					
MEAN		-	-	-	-			678	2500	-	0.80			678	2500	-	0.80	

Table 8. Biological data by length interval for cisco(spp) caught by experimental gillnets, Noell Lake, 1982.

LENGTH INTERVAL (MM)	MALES						FEMALES						COMBINED					
	N	LENGTH(MM) MEAN	WEIGHT(G) MEAN	WEIGHT(G) SD	K	% MAT	N	LENGTH(MM) MEAN	WEIGHT(G) MEAN	WEIGHT(G) SD	K	% MAT	N	LENGTH(MM) MEAN	WEIGHT(G) MEAN	WEIGHT(G) SD	K	% MAT
160	1	167	50	-	1.07	0	-	-	-	-	-	-	1	167	50	-	1.07	0
170	10	175	75	26	1.40	10	8	177	94	18	1.69	13	19	176	84	24	1.54	11
180	3	186	100	0	1.55	0	12	186	92	19	1.42	17	15	186	93	18	1.44	13
190	8	193	100	27	1.39	0	2	195	100	0	1.36	0	10	194	100	24	1.38	0
200	-	-	-	-	-	-	1	203	150	-	1.79	100	1	203	150	-	1.79	100
210	1	211	150	-	1.60	0	-	-	-	-	-	-	1	211	150	-	1.60	0
220	1	225	150	-	1.32	100	-	-	-	-	-	-	1	225	150	-	1.32	100
230	1	235	150	-	1.16	100	3	233	167	29	1.31	100	4	234	163	25	1.27	100
240	2	244	175	35	1.21	100	4	243	225	29	1.57	100	6	243	208	38	1.45	100
260	1	261	250	-	1.41	100	-	-	-	-	-	-	1	261	250	-	1.41	100
280	1	286	300	-	1.28	100	-	-	-	-	-	-	1	286	300	-	1.28	100
TOTAL	29						30						60					
MEAN		197	112	59	1.38			197	120	52	1.51			197	116	55	1.45	

Table 9. Biological data by age group for cisco(spp) caught by experimental gillnets, Noell Lake, 1982.

AGE (YR)	MALES							FEMALES							COMBINED						
	N	LENGTH(MM) MEAN	SD	WEIGHT(G) MEAN	SD	K	% MAT	N	LENGTH(MM) MEAN	SD	WEIGHT(G) MEAN	SD	K	% MAT	N	LENGTH(MM) MEAN	SD	WEIGHT(G) MEAN	SD	K	% MAT
2	15	184	9.9	87	30	1.37	0	19	185	7.3	97	20	1.54	21	34	185	8.4	93	25	1.46	12
3	7	230	23.6	164	48	1.34	71	7	239	5.6	200	41	1.46	100	14	234	17.1	182	46	1.40	86
5	1	286.	-	300	-	1.28	100	-	-	-	-	-	-	-	1	286	-	300	-	1.28	100
TOTAL	23							26							49						
MEAN		203	32	120	63	1.35			200	25.3	125	53	1.52			201	28.1	122	58	1.44	
MEAN AGE	2.3							2.3							2.3						

Table 10. Biological data by length interval for round whitefish caught by experimental gillnets, Noell Lake, 1982.

LENGTH INTERVAL (MM)	MALES						FEMALES						COMBINED					
		LENGTH(MM)	WEIGHT(G)			%		LENGTH(MM)	WEIGHT(G)			%		LENGTH(MM)	WEIGHT(G)			%
	N	MEAN	MEAN	SD	K	MAT	N	MEAN	MEAN	SD	K	MAT	N	MEAN	MEAN	SD	K	MAT
180	-	-	-	-	-	-	1	187	100	-	1.53	0	1	187	100	-	1.53	0
190	1	197	100	-	1.31	0	1	195	100	-	1.35	0	2	196	100	0	1.33	0
220	-	-	-	-	-	-	1	225	75	-	0.66	0	1	225	75	-	0.66	0
260	-	-	-	-	-	-	1	265	250	-	1.34	100	1	265	250	-	1.34	100
270	1	279	250	-	1.15	100	1	271	200	-	1.00	0	2	275	225	35	1.08	50
280	1	286	250	-	1.07	100	1	287	300	-	1.27	100	2	287	275	35	1.17	100
290	1	296	300	-	1.16	100	2	293	300	0	1.19	100	3	294	300	0	1.18	100
300	2	305	300	71	1.06	100	1	308	350	-	1.20	100	3	306	317	58	1.10	100
310	-	-	-	-	-	-	2	311	300	71	1.00	100	2	311	300	71	1.00	100
320	1	325	350	-	1.02	100	2	325	350	71	1.02	100	3	325	350	50	1.02	100
330	2	333	350	0	0.95	100	-	-	-	-	-	-	2	333	350	0	0.95	100
340	7	343	429	49	1.06	100	1	346	450	-	1.09	100	8	343	431	46	1.07	100
350	3	354	433	29	0.98	100	2	354	500	0	1.13	100	5	354	460	42	1.04	100
360	1	368	550	-	1.10	100	4	366	513	63	1.05	100	5	366	520	57	1.06	100
370	1	373	550	-	1.06	100	2	371	575	177	1.12	100	3	372	567	126	1.10	100
TOTAL	21						22						43					
MEAN		327	379	109	1.06			312	360	163	1.12			319	369	138	1.09	

Table 11. Biological data by age group for round whitefish caught by experimental gillnets, Noell Lake, 1982.

AGE (YR)	MALES							FEMALES							COMBINED						
		LENGTH(MM)		WEIGHT(G)			%		LENGTH(MM)		WEIGHT(G)			%		LENGTH(MM)		WEIGHT(G)			%
	N	MEAN	SD	MEAN	SD	K	MAT	N	MEAN	SD	MEAN	SD	K	MAT	N	MEAN	SD	MEAN	SD	K	MAT
6	4	292	11.4	263	25	1.06	100	4	283	19.2	275	65	1.20	75	8	287	15.4	269	46	1.13	88
7	3	328	20.2	400	50	1.13	100	5	306	13.4	320	57	1.11	100	8	315	18.7	350	65	1.12	100
8	3	351	19.3	433	104	0.99	100	3	348	23.5	483	202	1.11	100	6	349	19.3	458	146	1.05	100
9	7	347	12.0	436	75	1.04	100	3	363	7.2	533	58	1.11	100	10	352	13.1	465	82	1.06	100
10	2	354	0.7	450	0	1.02	100	3	362	8.5	483	29	1.02	100	5	359	7.6	470	27	1.02	100
TOTAL	19							18							37						
MEAN		334	27	395	93	1.05			327	36.0	400	134	1.12			330	31.4	397	113	1.08	
MEAN AGE	7.8							7.8							7.9						

Table 12. Biological data by length interval for northern pike caught by experimental gillnets, Noell Lake, 1982.

LENGTH INTERVAL (MM)	MALES						FEMALES						COMBINED					
	N	LENGTH(MM) MEAN	WEIGHT(G) MEAN	SD	K	% MAT	N	LENGTH(MM) MEAN	WEIGHT(G) MEAN	SD	K	% MAT	N	LENGTH(MM) MEAN	WEIGHT(G) MEAN	SD	K	% MAT
380	-	-	-	-	-	-	1	393	400	-	0.66	0	1	393	400	-	0.66	0
460	1	460	700	-	0.72	100	-	-	-	-	-	-	1	460	700	-	0.72	100
500	2	506	975	177	0.75	100	-	-	-	-	-	-	2	506	975	177	0.75	100
520	4	526	1150	141	0.79	100	-	-	-	-	-	-	4	526	1150	141	0.79	100
540	1	540	1200	-	0.76	100	1	552	1400	-	0.83	100	2	546	1300	141	0.80	100
560	2	568	1275	106	0.69	100	1	570	1500	-	0.81	100	3	569	1350	150	0.73	100
580	3	581	1467	153	0.75	100	-	-	-	-	-	-	3	581	1467	153	0.75	100
600	1	608	1700	-	0.76	100	-	-	-	-	-	-	1	608	1700	-	0.76	100
620	-	-	-	-	-	-	1	636	2100	-	0.82	100	1	636	2100	-	0.82	100
640	-	-	-	-	-	-	1	644	2050	-	0.77	100	1	644	2050	-	0.77	100
660	-	-	-	-	-	-	1	665	2400	-	0.82	100	1	665	2400	-	0.82	100
780	-	-	-	-	-	-	1	790	4150	-	0.84	100	1	790	4150	-	0.84	100
TOTAL	14						7						21					
MEAN		543	1221	274	0.75			607	2000	1152	0.79			565	1481	767	0.77	

Table 13. Biological data by age group for northern pike caught by experimental gillnets, Noell Lake, 1982.

AGE (YR)	MALES							FEMALES							COMBINED						
	N	LENGTH(MM) MEAN	SD	WEIGHT(G) MEAN	SD	K	% MAT	N	LENGTH(MM) MEAN	SD	WEIGHT(G) MEAN	SD	K	% MAT	N	LENGTH(MM) MEAN	SD	WEIGHT(G) MEAN	SD	K	% MAT
3	-	-	-	-	-	-	-	1	393	-	400	-	0.66	0	1	393	-	400	-	0.66	0
6	4	510	33.3	1013	243	0.76	100	2	594	59.4	1750	495	0.82	100	6	538	57.2	1258	479	0.78	100
7	4	548	36.2	1300	168	0.79	100	1	570	-	1500	-	0.81	100	5	552	32.9	1340	171	0.80	100
8	3	575	12.9	1367	208	0.72	100	-	-	-	-	-	-	-	3	575	12.9	1367	208	0.72	100
9	1	608	-	1700	-	0.76	100	1	644	-	2050	-	0.77	100	2	626	25.5	1875	247	0.76	100
10	-	-	-	-	-	-	-	1	790	-	4150	-	0.84	100	1	790	-	4150	-	0.84	100
TOTAL	12							6							18						
MEAN		547	42	1254	274	0.76			598	130.7	1933	1247	0.79			564	82.2	1481	784	0.77	
MEAN AGE	6.8							6.8							7.0						

Table 14. Creel census summary of Campbell Creek, 1983.

Date (D/M)	No. Anglers		Percent	N.Pike			Whitefish[4]			Burbot			Inconnu			A.Grayling			Hours Fished	No. Caught	
	Interviewed	Not Interviewed	Interviewed	C[1]	R[2]	K[3]	C	R	K	C	R	K	C	R	K	C	R	K		Per Angler	Per Angler-Hour
4/6	32	4	88.9	8	4	4	10	1	9	-	-	-	-	-	-	-	-	-	71.0	0.5	0.3
5/6	42	6	87.5	29	10	19	2	1	1	-	-	-	-	-	-	-	-	-	70.0	0.7	0.4
6/6	3	0	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.5	0.0	0.0
7/6	16	0	100.0	24	15	9	14	0	14	-	-	-	-	-	-	-	-	-	36.0	2.4	1.1
8/6	15	0	100.0	42	36	6	3	0	3	-	-	-	-	-	-	-	-	-	19.5	3.0	2.3
9/6	29	0	100.0	54	48	6	95	28	67	1	1	0	-	-	-	-	-	-	48.0	5.2	3.1
10/6	29	0	100.0	40	33	7	56	4	52	-	-	-	-	-	-	-	-	-	63.5	3.3	1.5
11/6	72	0	100.0	91	59	32	23	1	22	-	-	-	1	0	1	-	-	-	103.5	1.6	1.1
12/6	28	0	100.0	49	32	17	30	0	30	-	-	-	-	-	-	-	-	-	59.0	2.8	1.3
13/6	30	0	100.0	56	47	9	8	1	7	-	-	-	-	-	-	1	0	1	56.0	0.5	1.2
14/6	25	0	100.0	33	26	7	1	0	1	-	-	-	-	-	-	-	-	-	32.0	1.4	1.1
15/6	7	0	100.0	15	15	0	-	-	-	-	-	-	-	-	-	-	-	-	7.0	2.1	2.1
16/6	11	0	100.0	44	39	5	-	-	-	-	-	-	-	-	-	-	-	-	24.5	4.0	1.8
17/6	13	0	100.0	27	18	9	-	-	-	-	-	-	-	-	-	-	-	-	22.5	2.1	1.2
18/6	15	0	100.0	32	24	8	-	-	-	-	-	-	-	-	-	-	-	-	17.0	2.1	1.9
19/6	51	0	100.0	39	17	22	-	-	-	-	-	-	5	0	5	-	-	-	120.0	0.9	0.4
20/6	5	5	50.0	3	0	3	-	-	-	-	-	-	-	-	-	-	-	-	5.0	0.6	0.6
21/6	1	0	100.0	1	1	0	-	-	-	-	-	-	-	-	-	-	-	-	0.5	1.0	2.0
22/6	0	0	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	0.0	0.0
23/6	11	0	100.0	10	10	0	-	-	-	-	-	-	3	0	3	-	-	-	11.5	1.2	1.1
24/6	1	4	20.0	2	1	1	-	-	-	-	-	-	-	-	-	-	-	-	1.0	2.0	2.0
25/6	23	0	100.0	20	7	13	-	-	-	-	-	-	2	0	2	-	-	-	38.0	1.0	0.6
26/6	24	3	88.9	21	5	16	-	-	-	-	-	-	-	-	-	-	-	-	35.0	0.9	0.6
27/6	5	0	100.0	18	0	18	-	-	-	-	-	-	-	-	-	-	-	-	11.0	3.6	1.6
28/6	2	0	100.0	12	12	0	-	-	-	-	-	-	-	-	-	-	-	-	8.0	6.0	1.5
29/6	2	0	100.0	2	1	1	-	-	-	-	-	-	-	-	-	-	-	-	1.0	1.0	2.0
1/7	17	0	100.0	21	6	15	-	-	-	-	-	-	-	-	-	-	-	-	37.5	1.2	0.6
2/7	6	0	100.0	5	2	3	-	-	-	-	-	-	-	-	-	-	-	-	12.0	0.8	0.4
3/7	11	0	100.0	8	6	2	-	-	-	-	-	-	-	-	-	-	-	-	27.0	0.7	0.3
15/7	9	0	100.0	9	4	5	-	-	-	-	-	-	-	-	-	-	-	-	7.0	1.0	1.3
16/7	5	0	100.0	5	2	3	-	-	-	-	-	-	-	-	-	-	-	-	4.0	1.0	1.3
17/7	7	0	100.0	8	3	5	-	-	-	-	-	-	-	-	-	-	-	-	15.5	1.1	0.5
Total	547	22	96.1	728	483	245	242	36	206	1	1	0	11	0	11	1	0	1	966.0	-	-
Mean	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.8	1.0
Percent kept					33.70			85.10			0.00			100.00			100.00				
No. caught per angler-hour					0.75			0.25			0.00			0.01			0.00				
No. caught per angler					1.33			0.44			0.00			0.02			0.00				

[1]Number caught.
[2]Number released.
[3]Number kept.
[4]Lake and broad whitefish combined.

Table 15. Biological data by length interval for northern pike caught by angling, Campbell Creek, 1983.

LENGTH INTERVAL (MM)	MALES N	MALES LENGTH(MM) MEAN	MALES WEIGHT(G) MEAN	MALES WEIGHT(G) SD	MALES K	MALES % MAT	FEMALES N	FEMALES LENGTH(MM) MEAN	FEMALES WEIGHT(G) MEAN	FEMALES WEIGHT(G) SD	FEMALES K	FEMALES % MAT	COMBINED N	COMBINED LENGTH(MM) MEAN	COMBINED WEIGHT(G) MEAN	COMBINED WEIGHT(G) SD	COMBINED K	COMBINED % MAT
300	-	-	-	-	-	-	-	-	-	-	-	-	1	316	-	-	-	-
340	1	346	300	-	0.72	0	-	-	-	-	-	-	5	353	300	-	0.72	0
360	-	-	-	-	-	-	-	-	-	-	-	-	8	370	-	-	-	-
380	2	396	425	35	0.69	0	-	-	-	-	-	-	10	390	425	35	0.69	0
400	-	-	-	-	-	-	1	415	450	-	0.63	0	6	409	450	-	0.63	0
420	1	430	500	-	0.63	0	1	438	600	-	0.71	0	7	432	550	71	0.67	0
440	1	450	550	-	0.60	100	2	455	600	0	0.64	0	7	454	583	29	0.63	33
460	1	474	750	-	0.70	0	4	470	663	95	0.64	50	8	469	680	91	0.65	40
480	1	497	800	-	0.65	100	1	482	700	-	0.63	100	8	488	750	71	0.64	100
500	2	511	925	35	0.69	50	-	-	-	-	-	-	5	508	925	35	0.69	50
520	4	531	975	65	0.65	0	1	536	950	-	0.62	100	5	532	970	57	0.65	20
540	1	558	1200	-	0.69	0	-	-	-	-	-	-	3	549	1200	-	0.69	0
560	3	572	1167	29	0.62	67	4	572	1263	48	0.68	50	16	569	1221	64	0.65	57
580	-	-	-	-	-	-	1	593	1100	-	0.53	0	6	589	1100	-	0.53	0
600	2	609	1725	318	0.76	0	2	611	1300	141	0.57	100	15	608	1513	317	0.67	50
620	1	620	1550	-	0.65	0	1	623	1450	-	0.60	0	9	628	1500	71	0.63	0
640	-	-	-	-	-	-	4	647	1813	371	0.67	50	6	647	1813	371	0.67	50
660	2	670	1925	672	0.64	50	2	673	1975	35	0.65	50	8	667	1950	389	0.64	50
680	-	-	-	-	-	-	2	687	1900	71	0.59	100	6	686	1900	71	0.59	100
700	-	-	-	-	-	-	-	-	-	-	-	-	2	702	-	-	-	-
720	1	722	3100	-	0.82	0	3	728	2550	87	0.66	100	6	727	2688	284	0.70	75
740	-	-	-	-	-	-	1	747	2750	-	0.66	100	2	747	2750	-	0.66	100
780	-	-	-	-	-	-	-	-	-	-	-	-	2	785	-	-	-	-
820	-	-	-	-	-	-	2	823	3500	71	0.63	100	2	823	3500	71	0.63	100
900	-	-	-	-	-	-	-	-	-	-	-	-	1	910	-	-	-	-
980	-	-	-	-	-	-	-	-	-	-	-	-	1	997	-	-	-	-
TOTAL	23						32						155[a]					
MEAN		535	1137	656	0.68			602	1536	847	0.64			550	1369	791	0.65	

[a] Includes 100 fish tagged and released.

Table 16. Biological data by age group for northern pike caught by angling, Campbell Creek, 1983.

AGE (YR)	MALES N	MALES LENGTH(MM) MEAN	MALES LENGTH(MM) SD	MALES WEIGHT(G) MEAN	MALES WEIGHT(G) SD	MALES K	MALES % MAT	FEMALES N	FEMALES LENGTH(MM) MEAN	FEMALES LENGTH(MM) SD	FEMALES WEIGHT(G) MEAN	FEMALES WEIGHT(G) SD	FEMALES K	FEMALES % MAT	COMBINED N	COMBINED LENGTH(MM) MEAN	COMBINED LENGTH(MM) SD	COMBINED WEIGHT(G) MEAN	COMBINED WEIGHT(G) SD	COMBINED K	COMBINED % MAT
3	-	-	-	-	-	-	-	1	415	-	450	-	0.63	0	1	415	-	450	-	0.63	0
4	2	371	34.6	350	71	0.69	0	-	-	-	-	-	-	-	2	371	34.6	350	71	0.69	0
5	1	396	-	450	-	0.72	0	-	-	-	-	-	-	-	1	396	-	450	-	0.72	0
6	1	474	-	750	-	0.70	0	3	509	91.1	867	462	0.62	33	4	501	76.5	838	382	0.64	25
7	3	497	58.1	817	284	0.65	0	5	490	57.8	750	212	0.63	40	8	493	53.7	775	224	0.64	25
8	3	524	11.0	967	29	0.67	0	5	599	58.1	1510	510	0.68	80	8	571	58.9	1306	478	0.68	50
9	4	569	42.1	1300	453	0.69	75	4	691	101	2125	936	0.62	50	8	630	96.7	1713	811	0.65	63
10	5	613	70.6	1540	569	0.65	40	6	646	55.6	1658	490	0.60	67	11	631	61.9	1605	504	0.63	55
11	-	-	-	-	-	-	-	3	669	51.8	2033	535	0.67	67	3	669	51.8	2033	535	0.67	67
12	-	-	-	-	-	-	-	1	726	-	2650	-	0.69	100	1	726	-	2650	-	0.69	100
16	-	-	-	-	-	-	-	1	826	-	3550	-	0.63	100	1	826	-	3550	-	0.63	100
TOTAL	19							29							48						
MEAN		527	91	1061	535	0.67			606	110.1	1555	827	0.64			575	109.2	1359	760	0.65	
MEAN AGE	8.7							8.7							8.4						

Table 17. Biological data by length interval for whitefish (lake & broad) caught by angling, Campbell Creek, 1983.

LENGTH INTERVAL (MM)	MALES						FEMALES						COMBINED					
		LENGTH(MM)	WEIGHT(G)			%		LENGTH(MM)	WEIGHT(G)			%		LENGTH(MM)	WEIGHT(G)			%
	N	MEAN	MEAN	SD	K	MAT	N	MEAN	MEAN	SD	K	MAT	N	MEAN	MEAN	SD	K	MAT
260	1	264	600	-	3.26	0	-	-	-	-	-	-	1	264	600	-	3.26	0
340	1	342	500	-	1.25	0	-	-	-	-	-	-	1	342	500	-	1.25	0
360	-	-	-	-	-	-	-	-	-	-	-	-	1	360	600	-	1.29	-
370	2	375	675	35	1.29	0	-	-	-	-	-	-	2	375	675	35	1.29	0
380	4	384	725	50	1.28	0	1	388	800	-	1.37	0	5	385	740	55	1.30	0
390	1	390	800	-	1.35	0	-	-	-	-	-	-	1	390	800	-	1.35	0
400	3	403	750	50	1.15	0	2	404	800	71	1.21	0	5	403	770	57	1.17	0
410	3	414	933	115	1.31	0	1	410	950	-	1.38	0	4	413	938	95	1.33	0
420	6	424	992	74	1.30	17	1	420	1050	-	1.42	0	7	423	1000	71	1.32	14
430	1	439	1100	-	1.30	0	3	432	1017	76	1.26	0	4	434	1038	75	1.27	0
440	2	446	1100	0	1.24	50	3	444	1117	29	1.27	0	5	445	1110	22	1.26	20
450	2	457	1250	71	1.31	50	2	458	1250	141	1.30	0	4	457	1250	91	1.31	25
460	3	462	1267	153	1.28	67	3	464	1360	36	1.36	0	6	463	1313	112	1.32	33
470	2	475	1350	0	1.26	50	1	478	1550	-	1.42	0	3	476	1417	115	1.32	33
480	2	489	1625	177	1.39	0	2	484	1375	106	1.22	50	4	486	1500	187	1.30	25
490	1	493	1400	-	1.17	100	2	495	1500	141	1.24	50	3	494	1467	115	1.22	67
500	1	506	1700	-	1.31	100	1	503	1600	-	1.26	100	2	505	1650	71	1.28	100
TOTAL	35						22						58					
MEAN		424	1023	314	1.34			450	1195	255	1.29			433	1081	306	1.32	

Table 18. Biological data by age group for whitefish (lake & broad) caught by angling, Campbell Creek, 1983.

AGE (YR)	MALES							FEMALES							COMBINED						
		LENGTH(MM)		WEIGHT(G)			%		LENGTH(MM)		WEIGHT(G)			%		LENGTH(MM)		WEIGHT(G)			%
	N	MEAN	SD	MEAN	SD	K	MAT	N	MEAN	SD	MEAN	SD	K	MAT	N	MEAN	SD	MEAN	SD	K	MAT
4	7	359	44.8	664	94	1.56	0	-	-	-	-	-	-	-	8	359	41.5	656	90	1.52	0
5	10	412	18.4	910	137	1.29	0	4	406	13.4	913	111	1.36	0	14	410	16.9	911	126	1.31	0
6	3	418	6.0	967	153	1.32	0	1	487	-	1300	-	1.13	0	4	435	34.8	1050	208	1.27	0
7	5	478	19.8	1480	236	1.35	80	6	459	23.6	1263	241	1.29	33	11	468	23.1	1362	253	1.31	55
8	4	439	26.8	1050	252	1.22	25	9	459	20.8	1267	184	1.31	0	13	452	23.7	1200	222	1.28	8
9	1	489	-	1500	-	1.28	0	1	503	-	1600	-	1.26	100	2	496	9.9	1550	71	1.27	50
10	2	459	2.1	1200	141	1.25	50	-	-	-	-	-	-	-	2	459	2.1	1200	141	1.25	50
11	1	423	-	900	-	1.19	100	-	-	-	-	-	-	-	1	423	-	900	-	1.19	100
12	1	493	-	1400	-	1.17	100	-	-	-	-	-	-	-	1	493	-	1400	-	1.17	100
13	-	-	-	-	-	-	-	1	404	-	750	-	1.14	0	1	404	-	750	-	1.14	0
TOTAL	34							22							57						
MEAN		422	48	1013	313	1.34			450	32.5	1195	255	1.29			432	45.2	1076	307	1.32	
MEAN AGE	7.4							7.4							6.7						

Table 19. Catch and catch per unit effort (CPE) data for fish caught by experimental gillnets from Campbell Lake, 1983.

Fish		Mesh Size (mm) 38	64	89	114	140	Total	CPE[1]
Northern pike	No.	56	103	27	11	2	199	10.8
	%	28.1	51.8	13.6	5.5	1.0	47.5	
Inconnu	No.	44	25	9	10	1	89	4.8
	%	49.4	28.1	10.1	11.2	1.1	21.2	
Broad whitefish	No.	17	7	24	17	4	69	3.7
	%	24.6	10.1	34.8	24.6	5.8	16.5	
Lake whitefish	No.	23	18	14	3	1	59	3.2
	%	39.0	30.5	23.7	5.1	1.7	14.1	
Burbot	No.	-	-	1	-	-	1	.05
	%			100			0.2	
Yellow walleye	No.	1	-	-	-	-	1	.05
	%	100					0.2	
Lake trout	No.	-	-	1	-	-	1	.05
				100			0.2	
Total	No.	141	153	76	41	8	419	22.7
	%	33.7	36.5	18.1	9.8	1.9		

[1]No. fish per 100 m of gillnet per 24 h.

Table 20. Biological data by length interval for northern pike caught by experimental gillnets, Campbell Lake, 1983.

LENGTH INTERVAL (MM)	MALES						FEMALES						COMBINED					
		LENGTH(MM)	WEIGHT(G)			%		LENGTH(MM)	WEIGHT(G)			%		LENGTH(MM)	WEIGHT(G)			%
	N	MEAN	MEAN	SD	K	MAT	N	MEAN	MEAN	SD	K	MAT	N	MEAN	MEAN	SD	K	MAT
200	1	215	100	-	1.01	0	-	-	-	-	-	-	1	215	100	-	1.01	0
220	1	230	100	-	0.82	0	1	232	100	-	0.80	0	5	233	100	0	0.79	0
240	1	254	100	-	0.61	0	3	251	100	0	0.63	0	6	254	108	20	0.66	0
260	3	267	117	29	0.61	0	1	263	150	-	0.82	0	5	265	130	27	0.70	0
280	3	286	167	29	0.71	0	2	287	150	0	0.64	0	5	286	160	22	0.68	0
300	2	306	200	0	0.70	0	4	309	213	25	0.72	0	6	308	208	20	0.71	0
320	2	331	275	35	0.77	0	1	332	300	-	0.82	0	4	332	313	63	0.85	0
340	3	355	300	50	0.67	0	7	352	307	61	0.70	14	12	352	309	54	0.70	9
360	5	366	330	45	0.67	0	9	369	378	57	0.75	0	14	368	361	56	0.72	0
380	5	385	380	27	0.67	0	9	389	389	42	0.66	0	15	387	383	36	0.66	0
400	9	412	456	63	0.65	0	6	408	450	55	0.67	17	16	410	453	58	0.66	7
420	1	426	550	-	0.71	0	3	430	550	0	0.69	0	4	429	550	0	0.70	0
440	9	449	606	39	0.67	0	10	451	590	57	0.65	0	19	450	597	49	0.66	0
460	3	470	700	100	0.67	33	3	460	617	76	0.63	0	6	465	658	92	0.65	17
480	10	489	745	44	0.64	20	5	489	740	42	0.63	40	16	489	743	42	0.64	27
500	4	505	888	118	0.69	25	3	503	800	0	0.63	0	8	504	850	96	0.66	14
520	6	531	983	75	0.66	50	2	539	1000	0	0.64	50	8	533	988	64	0.65	50
540	2	546	975	106	0.60	50	3	551	983	189	0.59	33	5	549	980	144	0.59	40
560	8	568	1088	177	0.59	25	6	570	1142	74	0.62	50	14	569	1111	140	0.60	36
580	2	587	1300	212	0.64	100	3	592	1400	100	0.67	67	5	590	1360	139	0.66	80
600	2	609	1500	71	0.67	100	-	-	-	-	-	-	4	612	1500	71	0.67	100
620	-	-	-	-	-	-	3	626	1667	161	0.68	33	4	627	1667	161	0.68	33
640	-	-	-	-	-	-	2	647	1650	0	0.61	0	2	647	1650	0	0.61	0
660	2	664	1900	212	0.65	100	2	665	1975	35	0.67	50	4	665	1938	131	0.66	75
680	-	-	-	-	-	-	3	690	2133	29	0.65	100	3	690	2133	29	0.65	100
700	-	-	-	-	-	-	1	714	1800	-	0.49	100	4	711	1800	-	0.49	100
720	1	731	2850	-	0.73	100	-	-	-	-	-	-	2	731	2850	-	0.73	100
740	1	743	3000	-	0.73	100	3	748	2550	805	0.61	100	4	747	2663	694	0.64	100
820	-	-	-	-	-	-	2	828	4000	141	0.71	100	2	828	4000	141	0.71	100
840	-	-	-	-	-	-	1	850	4500	-	0.73	100	1	850	4500	-	0.73	100
860	-	-	-	-	-	-	1	870	5500	-	0.84	100	1	870	5500	-	0.84	100
880	-	-	-	-	-	-	1	889	4450	-	0.63	100	1	889	4450	-	0.63	100
940	-	-	-	-	-	-	1	954	7500	-	0.86	100	1	954	7500	-	0.86	100
960	1	968	5900	-	0.65	100	-	-	-	-	-	-	1	968	5900	-	0.65	100
980	-	-	-	-	-	-	1	983	5600	-	0.59	100	1	983	5600	-	0.59	100
1000	-	-	-	-	-	-	-	-	-	-	-	-	1	1001	-	-	-	-
TOTAL	87						102						210[a]					
MEAN		459	775	762	0.66			489	1068	1286	0.67			475	900	1070	0.67	

[a] Includes tagged fish.

Table 21. Biological data by age group for northern pike caught by experimental gillnets, Campbell Lake, 1983.

AGE (YR)	MALES N	MALES LENGTH(MM) MEAN	MALES LENGTH(MM) SD	MALES WEIGHT(G) MEAN	MALES WEIGHT(G) SD	MALES K	MALES % MAT	FEMALES N	FEMALES LENGTH(MM) MEAN	FEMALES LENGTH(MM) SD	FEMALES WEIGHT(G) MEAN	FEMALES WEIGHT(G) SD	FEMALES K	FEMALES % MAT	COMBINED N	COMBINED LENGTH(MM) MEAN	COMBINED LENGTH(MM) SD	COMBINED WEIGHT(G) MEAN	COMBINED WEIGHT(G) SD	COMBINED K	COMBINED % MAT
2	7	255	25.0	121	39	0.73	0	5	255	17.8	120	27	0.71	0	17	252	19.7	121	31	0.75	0
3	3	291	8.6	167	29	0.67	0	10	329	48.2	265	136	0.69	0	14	316	46.4	232	127	0.68	0
4	15	364	27.2	333	79	0.68	0	25	379	27.1	388	89	0.71	8	43	372	27.6	367	86	0.71	5
5	10	409	23.9	440	81	0.64	0	9	434	27.4	522	97	0.64	0	19	421	28.0	479	96	0.64	0
6	9	456	30.2	644	104	0.68	0	7	447	28.9	571	107	0.64	0	16	452	28.9	613	109	0.66	0
7	18	489	34.7	753	147	0.64	33	7	475	24.5	686	99	0.64	14	25	485	32.3	734	137	0.64	28
8	11	537	33.4	973	171	0.62	18	9	564	27.3	1133	230	0.62	56	20	550	33.0	1045	211	0.62	35
9	6	564	26.9	1183	151	0.66	67	7	564	46.4	1207	376	0.65	29	13	564	37.1	1196	283	0.66	46
10	3	644	99.7	1967	928	0.69	67	5	629	52.9	1610	452	0.63	60	8	635	67.1	1744	630	0.65	63
11	2	633	42.4	1650	141	0.65	100	5	701	50.9	2190	753	0.62	60	7	681	55.8	2036	671	0.63	71
12	-	-	-	-	-	-	-	2	715	49.5	1950	212	0.55	100	2	715	49.5	1950	212	0.55	100
13	1	743	-	3000	-	0.73	100	2	840	203	3875	2440	0.61	100	3	807	154	3583	1797	0.65	100
14	-	-	-	-	-	-	-	3	856	30.0	4350	218	0.69	100	3	856	30.0	4350	218	0.69	100
15	-	-	-	-	-	-	-	1	825	-	3900	-	0.69	100	1	825	-	3900	-	0.69	100
17	1	968	-	5900	-	0.65	100	-	-	-	-	-	-	-	1	968	-	5900	-	0.65	100
TOTAL	86							97							192						
MEAN		457	122	767	763	0.66			480	154.3	956	1037	0.66			460	143.0	836	911	0.67	
MEAN AGE		6.4							6.4							6.2					

Table 22. Biological data by length interval for yellow walleye caught by experimental gillnets, Campbell Lake, 1983.

LENGTH INTERVAL (MM)	MALES N	MALES LENGTH(MM) MEAN	MALES WEIGHT(G) MEAN	MALES WEIGHT(G) SD	MALES K	MALES % MAT	FEMALES N	FEMALES LENGTH(MM) MEAN	FEMALES WEIGHT(G) MEAN	FEMALES WEIGHT(G) SD	FEMALES K	FEMALES % MAT	COMBINED N	COMBINED LENGTH(MM) MEAN	COMBINED WEIGHT(G) MEAN	COMBINED WEIGHT(G) SD	COMBINED K	COMBINED % MAT
190	-	-	-	-	-	-	-	-	-	-	-	-	1	197	100	-	1.31	0
TOTAL	0						0						1					
MEAN		-	-	-	-			-	-	-	-			197	100	-	1.31	

Table 23. Biological data by age group for yellow walleye caught by experimental gillnets, Campbell Lake, 1983.

AGE (YR)	MALES							FEMALES							COMBINED						
		LENGTH(MM)		WEIGHT(G)			%		LENGTH(MM)		WEIGHT(G)			%		LENGTH(MM)		WEIGHT(G)			%
	N	MEAN	SD	MEAN	SD	K	MAT	N	MEAN	SD	MEAN	SD	K	MAT	N	MEAN	SD	MEAN	SD	K	MAT
3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	197	-	100	-	1.31	0
TOTAL	0							0							1						
MEAN		-	-	-	-	-			-	-	-	-	-			197	-	100	-	1.31	
MEAN AGE		-							-							3.0					

Table 24. Biological data by length interval for lake whitefish caught by experimental gillnets, Campbell Lake, 1983.

LENGTH INTERVAL (MM)	MALES						FEMALES						COMBINED					
		LENGTH(MM)	WEIGHT(G)			%		LENGTH(MM)	WEIGHT(G)			%		LENGTH(MM)	WEIGHT(G)			%
	N	MEAN	MEAN	SD	K	MAT	N	MEAN	MEAN	SD	K	MAT	N	MEAN	MEAN	SD	K	MAT
150	-	-	-	-	-	-	1	158	50	-	1.27	0	1	158	50	-	1.27	0
160	-	-	-	-	-	-	-	-	-	-	-	-	1	166	50	-	1.09	0
170	1	171	50	-	1.00	0	1	179	50	-	0.87	0	4	175	56	13	1.04	0
180	-	-	-	-	-	-	3	186	67	29	1.03	0	4	186	63	25	0.97	0
190	-	-	-	-	-	-	1	198	100	-	1.29	0	3	195	83	29	1.11	0
200	-	-	-	-	-	-	2	206	125	35	1.44	0	3	204	100	50	1.17	0
220	-	-	-	-	-	-	-	-	-	-	-	-	1	226	150	-	1.30	0
230	-	-	-	-	-	-	1	235	150	-	1.16	0	2	236	200	71	1.52	0
250	-	-	-	-	-	-	1	257	250	-	1.47	0	2	255	225	35	1.36	0
260	-	-	-	-	-	-	1	269	250	-	1.28	0	1	269	250	-	1.28	0
290	1	291	400	-	1.62	0	-	-	-	-	-	-	1	291	400	-	1.62	0
310	-	-	-	-	-	-	2	315	425	177	1.35	0	2	315	425	177	1.35	0
320	2	328	475	35	1.35	0	1	320	500	-	1.53	0	3	325	483	29	1.41	0
330	1	335	500	-	1.33	100	-	-	-	-	-	-	1	335	500	-	1.33	100
340	1	344	550	-	1.35	0	-	-	-	-	-	-	1	344	550	-	1.35	0
350	2	350	625	35	1.46	0	2	355	650	71	1.45	0	4	353	638	48	1.46	0
360	2	365	650	0	1.34	0	3	364	733	104	1.52	0	5	364	700	87	1.45	0
370	1	370	700	-	1.38	0	-	-	-	-	-	-	1	370	700	-	1.38	0
380	1	386	900	-	1.56	100	-	-	-	-	-	-	1	386	900	-	1.56	100
390	-	-	-	-	-	-	2	395	925	35	1.51	50	2	395	925	35	1.51	50
400	2	405	875	106	1.32	50	1	405	1000	-	1.51	0	4	404	938	95	1.43	25
410	3	414	1067	104	1.51	67	-	-	-	-	-	-	3	414	1067	104	1.51	67
420	1	428	1200	-	1.53	100	1	429	1100	-	1.39	100	2	429	1150	71	1.46	100
440	-	-	-	-	-	-	1	449	1300	-	1.44	100	1	449	1300	-	1.44	100
450	-	-	-	-	-	-	1	455	1450	-	1.54	100	1	455	1450	-	1.54	100
470	2	474	1600	283	1.50	50	-	-	-	-	-	-	2	474	1600	283	1.50	50
520	-	-	-	-	-	-	1	525	2450	-	1.69	100	1	525	2450	-	1.69	100
TOTAL	20						26						57					
MEAN		370	798	397	1.41			310	588	568	1.37			314	584	509	1.34	

Table 25. Biological data by age group for lake whitefish caught by experimental gillnets, Campbell Lake, 1983.

AGE (YR)	MALES N	MALES LENGTH(MM) MEAN	MALES LENGTH(MM) SD	MALES WEIGHT(G) MEAN	MALES WEIGHT(G) SD	MALES K	MALES % MAT	FEMALES N	FEMALES LENGTH(MM) MEAN	FEMALES LENGTH(MM) SD	FEMALES WEIGHT(G) MEAN	FEMALES WEIGHT(G) SD	FEMALES K	FEMALES % MAT	COMBINED N	COMBINED LENGTH(MM) MEAN	COMBINED LENGTH(MM) SD	COMBINED WEIGHT(G) MEAN	COMBINED WEIGHT(G) SD	COMBINED K	COMBINED % MAT
2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	200	-	50	-	0.63	0
3	-	-	-	-	-	-	-	2	169	14.8	50	0	1.07	0	4	172	12.6	50	0	1.00	0
4	1	171	-	50	-	1.00	0	1	187	-	100	-	1.53	0	4	182	12.5	75	29	1.20	0
5	-	-	-	-	-	-	-	7	231	48.3	186	152	1.28	0	9	226	45.4	181	139	1.35	0
7	1	291	-	400	-	1.62	0	1	257	-	250	-	1.47	0	3	258	32.5	267	126	1.47	0
8	1	478	-	1800	-	1.65	100	2	397	46.0	975	177	1.58	50	3	424	57.2	1250	492	1.60	67
9	1	344	-	550	-	1.35	0	2	354	61.5	600	424	1.22	50	3	350	43.8	583	301	1.27	33
10	6	377	38.3	767	254	1.39	50	6	379	45.8	850	286	1.52	17	13	380	39.1	823	256	1.46	31
11	2	390	35.4	875	318	1.44	0	-	-	-	-	-	-	-	2	390	35.4	875	318	1.44	0
12	3	359	29.9	683	202	1.44	33	-	-	-	-	-	-	-	3	359	29.9	683	202	1.44	33
13	3	400	29.1	950	250	1.46	33	1	455	-	1450	-	1.54	100	4	414	36.3	1075	323	1.48	50
14	1	470	-	1400	-	1.35	0	-	-	-	-	-	-	-	1	470	-	1400	-	1.35	0
17	-	-	-	-	-	-	-	1	525	-	2450	-	1.69	100	1	525	-	2450	-	1.69	100
TOTAL	19							23							51						
MEAN		372	68	813	401	1.42			311	105.9	604	593	1.39			317	102.0	610	524	1.37	
MEAN AGE		7.7							7.7							8.2					

Table 26. Biological data by length interval for broad whitefish caught by experimental gillnets, Campbell Lake, 1983.

LENGTH INTERVAL (MM)	MALES N	MALES LENGTH(MM) MEAN	MALES WEIGHT(G) MEAN	MALES WEIGHT(G) SD	MALES K	MALES % MAT	FEMALES N	FEMALES LENGTH(MM) MEAN	FEMALES WEIGHT(G) MEAN	FEMALES WEIGHT(G) SD	FEMALES K	FEMALES % MAT	COMBINED N	COMBINED LENGTH(MM) MEAN	COMBINED WEIGHT(G) MEAN	COMBINED WEIGHT(G) SD	COMBINED K	COMBINED % MAT
140	-	-	-	-	-	-	-	-	-	-	-	-	1	146	25	-	0.80	0
150	-	-	-	-	-	-	-	-	-	-	-	-	2	156	50	0	1.32	0
160	-	-	-	-	-	-	-	-	-	-	-	-	2	163	50	0	1.1'	0
180	-	-	-	-	-	-	1	180	100	-	1.71	0	5	183	80	27	1.32	0
190	-	-	-	-	-	-	-	-	-	-	-	-	2	195	100	71	1.33	0
200	-	-	-	-	-	-	-	-	-	-	-	-	1	200	100	-	1.25	0
230	-	-	-	-	-	-	-	-	-	-	-	-	2	233	200	0	1.59	0
240	-	-	-	-	-	-	-	-	-	-	-	-	1	244	150	-	1.03	0
320	-	-	-	-	-	-	-	-	-	-	-	-	1	327	400	-	1.14	-
340	-	-	-	-	-	-	1	340	500	-	1.27	0	1	340	500	-	1.27	0
360	2	364	575	35	1.19	0	1	362	650	-	1.37	0	3	363	600	50	1.25	0
370	1	375	700	-	1.33	0	2	375	700	141	1.33	50	3	375	700	100	1.33	33
380	1	380	900	-	1.64	0	-	-	-	-	-	-	1	380	900	-	1.64	0
390	1	396	900	-	1.45	0	-	-	-	-	-	-	1	396	900	-	1.45	0
400	1	400	1100	-	1.72	100	1	400	950	-	1.48	0	2	400	1025	106	1.60	50
410	-	-	-	-	-	-	2	413	900	0	1.28	100	2	413	900	0	1.28	100
420	2	425	1038	53	1.36	50	2	423	975	35	1.29	50	4	424	1006	52	1.32	50
430	-	-	-	-	-	-	1	430	1150	-	1.45	100	1	430	1150	-	1.45	100
440	-	-	-	-	-	-	2	443	1250	71	1.44	0	2	443	1250	71	1.44	0
450	-	-	-	-	-	-	1	457	1500	-	1.57	100	1	457	1500	-	1.57	100
460	-	-	-	-	-	-	5	468	1640	164	1.60	40	5	468	1640	164	1.60	40
480	2	480	1675	35	1.51	0	2	485	1675	106	1.47	100	4	483	1675	65	1.49	50
490	2	493	1850	71	1.55	50	2	495	2075	35	1.72	100	4	494	1963	138	1.63	75
500	1	507	1950	-	1.50	100	5	502	2000	318	1.58	60	6	503	1992	285	1.56	67
510	3	513	2100	229	1.55	67	1	510	2300	-	1.73	100	4	513	2150	212	1.60	75
520	1	523	2250	-	1.57	100	-	-	-	-	-	-	1	523	2250	-	1.57	100
560	-	-	-	-	-	-	1	561	2650	-	1.50	100	1	561	2650	-	1.50	100
TOTAL	17						30						63					
MEAN		450	1434	605	1.48			445	1438	623	1.50			383	1100	785	1.43	

Table 27. Biological data by age group for broad whitefish caught by experimental gillnets, Campbell Lake, 1983.

AGE (YR)	MALES N	MALES LENGTH(MM) MEAN	MALES LENGTH(MM) SD	MALES WEIGHT(G) MEAN	MALES WEIGHT(G) SD	MALES K	MALES % MAT	FEMALES N	FEMALES LENGTH(MM) MEAN	FEMALES LENGTH(MM) SD	FEMALES WEIGHT(G) MEAN	FEMALES WEIGHT(G) SD	FEMALES K	FEMALES % MAT	COMBINED N	COMBINED LENGTH(MM) MEAN	COMBINED LENGTH(MM) SD	COMBINED WEIGHT(G) MEAN	COMBINED WEIGHT(G) SD	COMBINED K	COMBINED % MAT
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	185	-	50	-	0.79	0
2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	153	9.9	38	18	1.01	0
3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	189	29.2	100	61	1.39	0
4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	249	70.9	217	176	1.18	0
5	4	385	16.0	863	229	1.48	25	2	369	9.2	725	106	1.44	0	9	324	84.9	589	376	1.45	11
6	2	369	8.5	650	71	1.29	0	3	464	55.3	1650	608	1.59	67	5	426	65.1	1250	697	1.47	40
7	2	509	2.8	1900	71	1.44	50	2	485	0.0	1675	106	1.47	100	4	497	14.0	1788	149	1.45	75
8	2	502	30.4	1975	389	1.55	50	6	447	53.1	1275	603	1.34	50	8	461	52.7	1450	622	1.39	50
9	3	488	7.6	1783	126	1.53	33	9	462	62.3	1633	697	1.55	44	12	468	54.6	1671	601	1.54	42
10	3	454	51.7	1458	730	1.47	67	2	450	27.6	1425	389	1.55	50	5	452	39.2	1445	552	1.50	60
11	-	-	-	-	-	-	-	2	459	62.2	1450	778	1.42	100	2	459	62.2	1450	778	1.42	100
12	-	-	-	-	-	-	-	1	467	-	1600	-	1.57	100	1	467	-	1600	-	1.57	100
13	-	-	-	-	-	-	-	1	498	-	2100	-	1.70	100	1	498	-	2100	-	1.70	100
14	1	515	-	2150	-	1.57	100	-	-	-	-	-	-	-	1	515	-	2150	-	1.57	100
TOTAL	17							28							59						
MEAN		450	60	1434	605	1.48			454	53.0	1484	590	1.49			393	119.9	1146	774	1.43	
MEAN AGE		8.5							8.5							7.1					

Table 28. Biological data by length interval for inconnu caught by experimental gillnets, Campbell Lake, 1983.

LENGTH INTERVAL (MM)	MALES N	MALES LENGTH(MM) MEAN	MALES WEIGHT(G) MEAN	MALES WEIGHT(G) SD	MALES K	MALES % MAT	FEMALES N	FEMALES LENGTH(MM) MEAN	FEMALES WEIGHT(G) MEAN	FEMALES WEIGHT(G) SD	FEMALES K	FEMALES % MAT	COMBINED N	COMBINED LENGTH(MM) MEAN	COMBINED WEIGHT(G) MEAN	COMBINED WEIGHT(G) SD	COMBINED K	COMBINED % MAT
160	2	169	50	0	1.04	0	1	170	50	-	1.02	0	5	170	50	0	1.03	0
180	2	183	100	0	1.65	0	2	194	100	0	1.38	0	7	189	86	24	1.28	0
200	5	211	110	22	1.19	0	2	205	100	0	1.16	0	7	209	107	19	1.18	0
220	1	237	150	-	1.13	0	5	230	140	22	1.15	0	6	231	142	20	1.15	0
240	3	248	200	0	1.32	0	6	249	175	27	1.14	0	9	248	183	25	1.20	0
260	4	270	250	0	1.28	0	9	264	222	36	1.20	0	13	266	231	33	1.23	0
280	6	285	275	42	1.19	0	3	292	283	76	1.12	0	10	287	270	54	1.14	0
460	-	-	-	-	-	-	1	470	950	-	0.92	0	1	470	950	-	0.92	0
520	2	526	1400	71	0.96	0	2	534	1475	106	0.97	50	4	530	1438	85	0.97	25
540	-	-	-	-		-	2	549	1525	106	0.92	50	2	549	1525	106	0.92	50
560	1	573	1900	-	1.01	0	2	567	1700	141	0.93	0	4	570	1775	126	0.96	0
600	1	603	2150	-	0.98	0	-	-	-	-	-	-	1	603	2150	-	0.98	0
620	1	620	2450	-	1.03	100	1	632	2500	-	0.99	100	2	626	2475	35	1.01	100
640	-	-	-	-	-	-	2	653	2900	354	1.04	0	2	653	2900	354	1.04	0
660	1	673	3000	-	0.98	0	-	-	-	-	-	-	1	673	3000	-	0.98	0
680	1	685	3200	-	1.00	100	2	693	3175	177	0.95	0	3	690	3183	126	0.97	33
700	1	715	3800	-	1.04	100	1	715	3800	-	1.04	100	2	715	3800	0	1.04	100
720	1	720	3900	-	1.04	100	-	-	-	-	-	-	1	720	3900	-	1.04	100
740	1	756	4200	-	0.97	100	1	756	4150	-	0.96	100	2	756	4175	35	0.97	100
760	-	-	-	-	-	-	1	766	4750	-	1.06	100	1	766	4750	-	1.06	100
800	-	-	-	-	-	-	1	813	5450	-	1.01	100	1	813	5450	-	1.01	100
TOTAL	33						44						84					
MEAN		361	959	1314	1.17			387	1095	1457	1.10			365	978	1358	1.12	

Table 29. Biological data by age group for inconnu caught by experimental gillnets, Campbell Lake, 1983.

AGE (YR)	MALES N	MALES LENGTH(MM) MEAN	MALES LENGTH(MM) SD	MALES WEIGHT(G) MEAN	MALES WEIGHT(G) SD	MALES K	MALES % MAT	FEMALES N	FEMALES LENGTH(MM) MEAN	FEMALES LENGTH(MM) SD	FEMALES WEIGHT(G) MEAN	FEMALES WEIGHT(G) SD	FEMALES K	FEMALES % MAT	COMBINED N	COMBINED LENGTH(MM) MEAN	COMBINED LENGTH(MM) SD	COMBINED WEIGHT(G) MEAN	COMBINED WEIGHT(G) SD	COMBINED K	COMBINED % MAT
2	1	210	-	100	-	1.08	0	-	-	-	-	-	-	-	1	210	-	100	-	1.08	0
3	-	-	-	-	-	-	-	1	285	-	200	-	0.86	0	1	285	-	200	-	0.86	0
4	2	172	12.0	75	35	1.43	0	4	199	28.5	100	41	1.22	0	6	189	23.3	88	35	1.25	0
5	2	370	219	775	955	1.00	0	1	226	-	150	-	1.30	0	3	322	176	567	765	1.10	0
6	3	231	22.2	167	29	1.38	0	7	322	129	471	519	1.10	14	10	295	114	380	449	1.18	10
7	5	362	172	750	823	1.11	0	9	420	155	967	746	1.01	11	15	392	155	843	744	1.04	7
8	5	342	146	630	850	1.14	0	3	269	6.1	250	50	1.29	0	9	344	139	633	766	1.17	0
9	5	428	200	1260	1352	1.15	20	3	646	12.5	2767	340	1.02	33	8	510	189	1825	1298	1.10	25
10	2	703	24.7	3550	495	1.02	100	3	700	13.1	3383	382	0.98	33	5	701	15.5	3450	377	1.00	60
11	1	715	-	3800	-	1.04	100	3	621	284	3317	2650	1.11	67	4	645	237	3438	2177	1.09	75
12	1	756	-	4200	-	0.97	100	1	766	-	4750	-	1.06	100	2	761	7.1	4475	389	1.01	100
TOTAL	27							35							66						
MEAN		390	203	1133	1397	1.15			423	208.2	1333	1549	1.09			403	204.1	1203	1451	1.11	
MEAN AGE		7.3							7.3							7.3					

Table 30. Biological data by length interval for lake trout caught by experimental gillnets, Campbell Lake, 1983.

LENGTH INTERVAL (MM)	MALES N	MALES LENGTH(MM) MEAN	MALES WEIGHT(G) MEAN	MALES WEIGHT(G) SD	MALES K	MALES % MAT	FEMALES N	FEMALES LENGTH(MM) MEAN	FEMALES WEIGHT(G) MEAN	FEMALES WEIGHT(G) SD	FEMALES K	FEMALES % MAT	COMBINED N	COMBINED LENGTH(MM) MEAN	COMBINED WEIGHT(G) MEAN	COMBINED WEIGHT(G) SD	COMBINED K	COMBINED % MAT
425	-	-	-	-	-	-	1	435	1000	-	1.21	100	1	435	1000	-	1.21	100
TOTAL	0						1						1					
MEAN		-	-	-	-			435	1000	-	1.21			435	1000	-	1.21	

Table 31. Biological data by length interval for burbot caught by experimental gillnets, Campbell Lake, 1983.

LENGTH INTERVAL (MM)	NO.	PERCENT	MEAN FORK LENGTH(MM)	ROUND WEIGHT(G) MEAN	ROUND WEIGHT(G) SD
620	1	100	623	1300	-
TOTAL	1				
MEAN			623	1300	-

Table 32. Length-frequency for tagged northern pike caught by angling, Campbell Lake, 1983.

LENGTH INTERVAL (MM)	NO.	PERCENT	MEAN FORK LENGTH(MM)	ROUND WEIGHT(G) MEAN	SD
440	1	17	448	-	-
540	1	17	552	-	-
600	1	17	609	-	-
640	1	17	645	-	-
700	2	33	715	-	-
TOTAL	6				
MEAN			614	-	-

Table 33. Length-frequency for tagged northern pike caught by trap nets, Campbell Lake, 1983.

LENGTH INTERVAL (MM)	NO.	PERCENT	MEAN FORK LENGTH(MM)	ROUND WEIGHT(G) MEAN	SD
340	1	3	355	-	-
380	2	5	394	-	-
420	2	5	428	-	-
440	4	10	446	-	-
460	2	5	467	-	-
480	3	8	482	-	-
500	1	3	504	-	-
520	6	15	532	-	-
540	2	5	558	-	-
560	1	3	569	-	-
580	2	5	597	-	-
600	3	8	607	-	-
620	2	5	631	-	-
660	3	8	665	-	-
740	2	5	747	-	-
800	1	3	817	-	-
840	1	3	847	-	-
1000	1	3	1000	-	-
TOTAL	39				
MEAN			563	-	-

Table 34. Fecundity of lake trout from Noell Lake, 1982.

Date	Fork Length (mm)	Body Weight (g)	Number of Ova		
			Ovary 1	Ovary 2	Combined
9 August	480	1200	1010	1113	2123
9 August	462	1100	1122	592	1714
10 August	488	1250	910	1063	1973
11 August	513	1550	737	911	1648
12 August	602	2900	2157	1453	3610
12 August	476	1200	614	741	1355
12 August	485	1450	877	1240	2117
12 August	480	1250	782	845	1627
12 August	478	1200	728	942	1670
12 August	466	1100	580	1250	1830
12 August	501	1550	861	1071	1932
16 August	436	1150	614	867	1481
Mean	489	1408	916	1007	1923

Table 35. Weight-length relationships, $\log_{10}$ W=a+b ($\log_{10}$L), for each fish species (sexes combined) from Noell Lake, 1982 and Campbell Lake, 1983.

Species	N	Y-intercept (a)	Slope (b)	Standard Dev. of b(SD_b)	95% C.I.
Noell Lake (1982)					
Lake trout	496	-4.6391	2.8812	0.0272	0.9212-4.8412
Lake whitefish	288	-5.2487	3.1754	0.0210	1.2154-5.1354
Round whitefish	86	-4.2801	2.7245	0.0950	0.7355-4.7135
Cisco	120	-4.5277	2.8586	0.1866	0.8986-4.8186
Northern pike	42	-5.8741	3.2752	0.0991	1.2542-5.2962
Campbell Lake (1983)					
Northern pike	396	-4.8624	2.8815	0.0214	0.9215-4.8415
Lake whitefish	114	-5.9073	3.4147	0.0512	1.4327-5.3967
Broad whitefish	125	-5.4806	3.2456	0.0410	1.2856-5.2056
Inconnu	168	-4.5989	2.8569	0.0241	0.8969-4.8169
Campbell Creek (1983)					
Northern Pike	109	-5.0662	2.9560	0.0549	0.9740-4.938
Whitefish (Broad & Lake)	116	-3.2932	2.3956	0.1041	0.4136-4.3776

Table 36. Water temperatures (°C) and dissolved oxygen (DO/ppl) profiles for Noell Lake, 1982 and Campbell Lake, 1983.

		Depth (m)						
		Surface	1	2	3	5	10	15
Noell Lake								
8 August	DO	9	10	10	10	12	11	-
	C°	16	14	14	15	15	14	-
14 August	DO	9	9	11	11	10	11	-
	C°	11	11	11	11	11	11	-
Campbell Lake								
4 July	DO	10	10	-	-	10	9	8
	C°	17	16	-	-	12	9	8
19 July	DO	9	9	-	-	9	6	5
	C°	15	15	-	-	14	10	9

Table 37. Chemical analysis of surface water samples taken from Noell Lake, 1982 and Campbell Lake, 1983.

	TDN $\mu g \cdot L^{-1}$	TDP $\mu g \cdot L^{-1}$	CHLOR-A $\mu g \cdot L^{-1}$	Na $mg \cdot L^{-1}$	K $mg \cdot L^{-1}$	Ca $mg \cdot L^{-1}$	Mg $mg \cdot L^{-1}$
Noell Lake (1982)							
10 August	410	23	0.4	2.71	1.05	6.66	1.90
16 August	1590	117	0.3	1.10	0.26	2.67	0.53
Campbell Lake (1983)							
1 July	620	32	-	4.82	1.48	23.2	5.29
19 July	560	17	-	5.12	1.30	24.7	5.56

	Cl $mg \cdot L^{-1}$	SO_4 $mg \cdot L^{-1}$	SUSP P $\mu g \cdot L^{-1}$	SUSP N $\mu g \cdot L^{-1}$	SUSP C $\mu g \cdot L^{-1}$
Noell Lake (1982)					
10 August	2.8	10.6	6	114	1030
16 August	2.1	8.4	2	25	720
Campbell Lake (1983)					
1 July	6.7	20.9	16	-	-
19 July	6.4	21.6	16	-	-

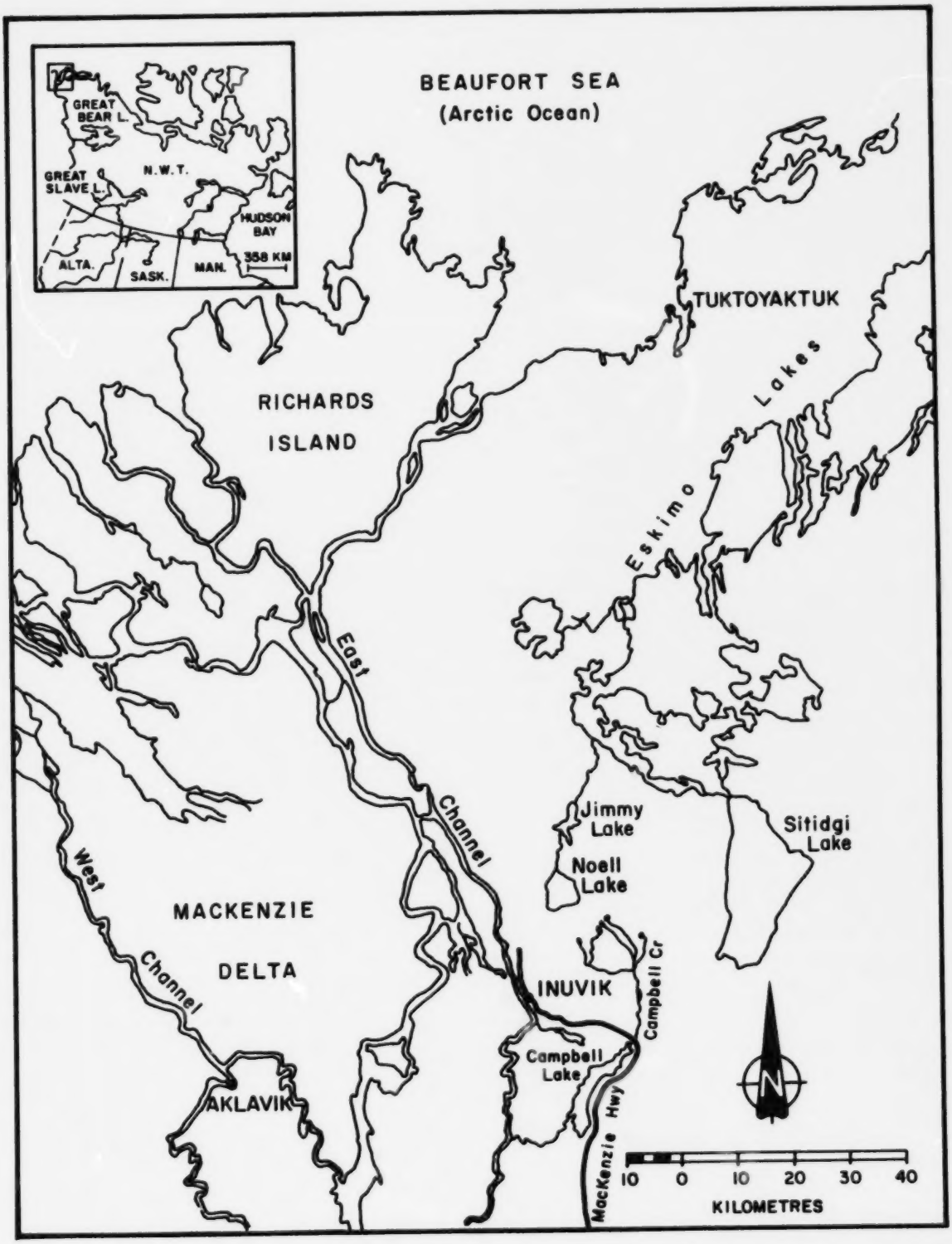

Fig. 1. Map of the western Arctic showing the relative locations of Noell Lake, Campbell Lake and Campbell Creek.

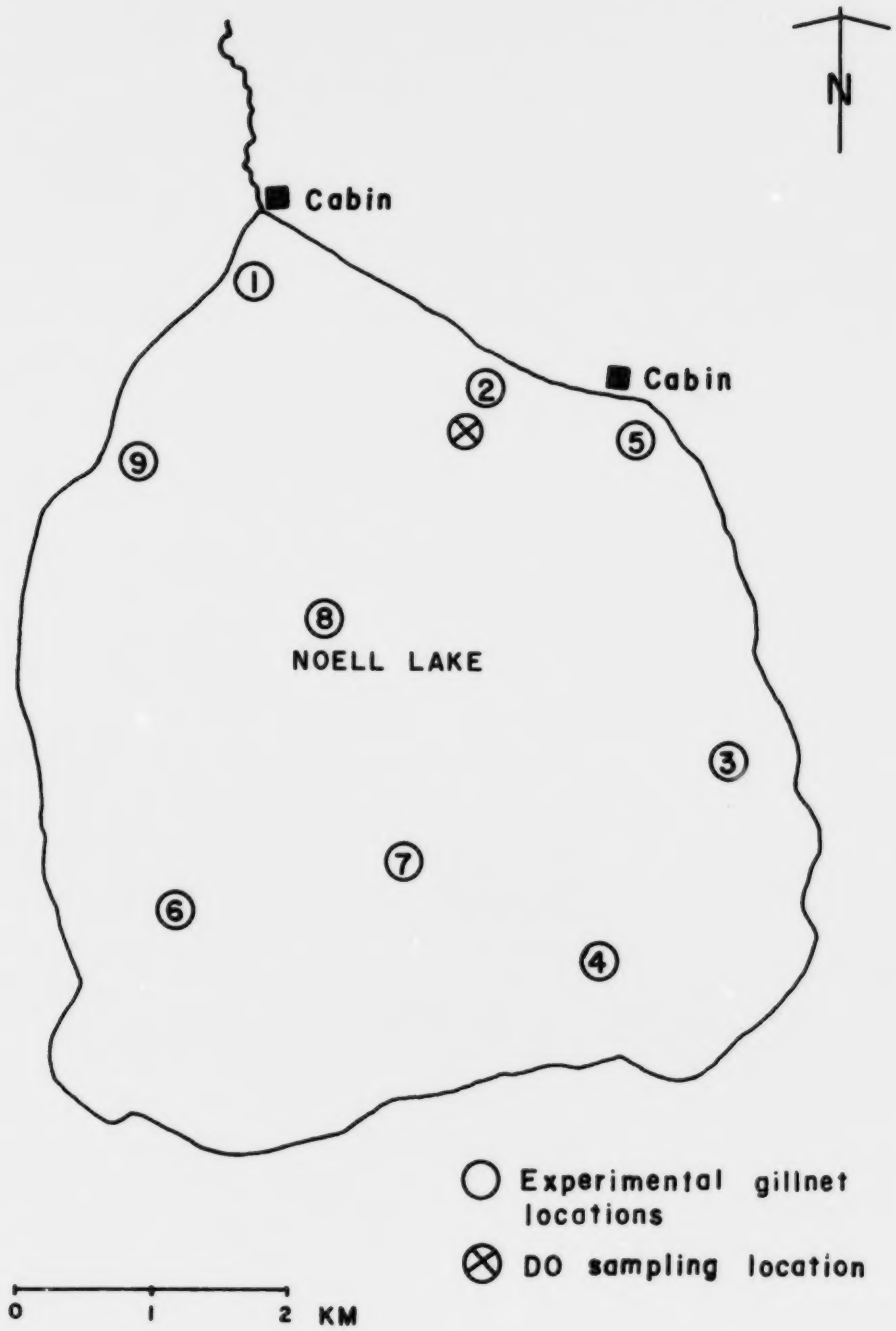

Fig. 2. Map of Noell Lake showing the location of cabins and experimental gillnet locations, 1982.

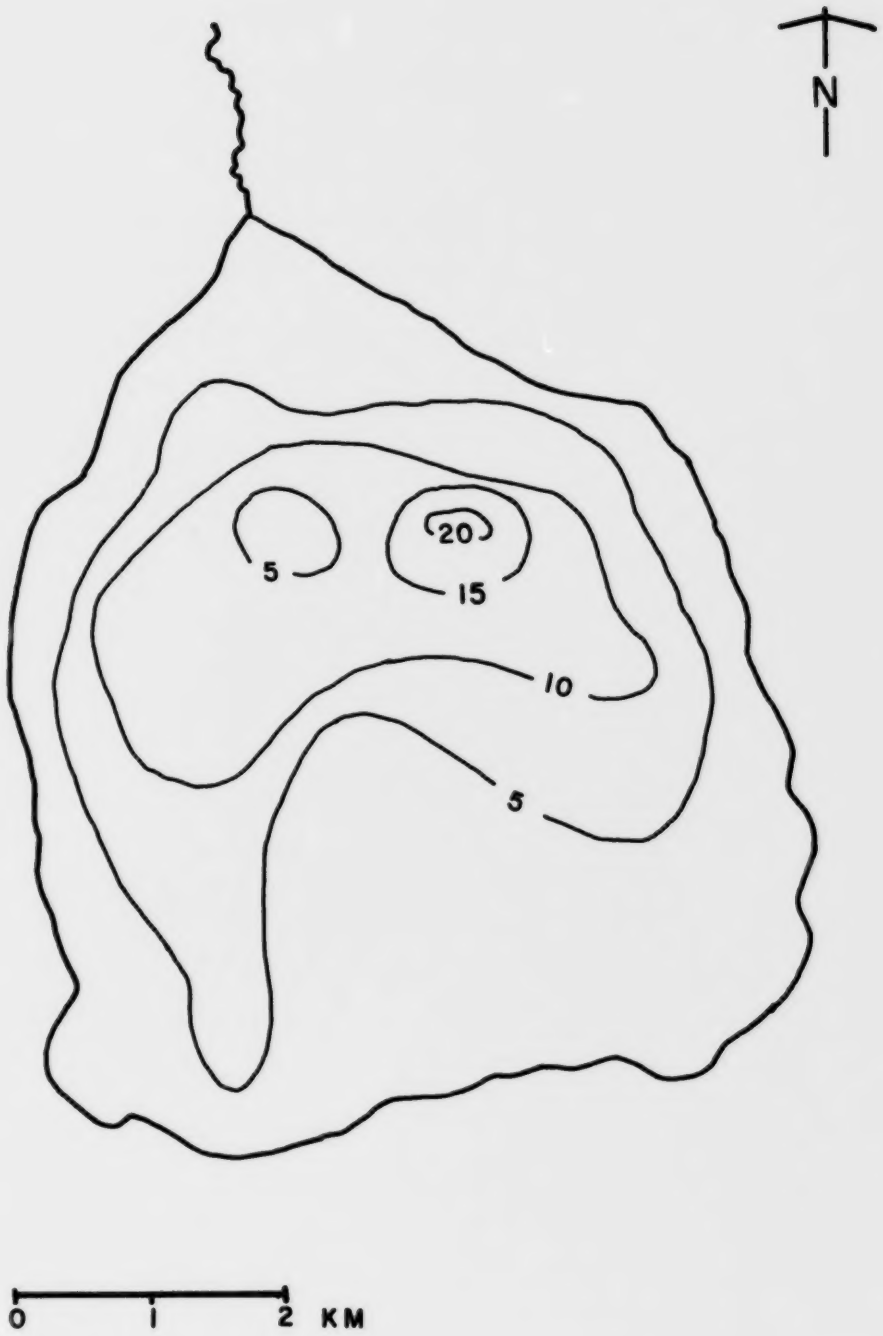

Fig. 3. Bathymetric map of Noell Lake, 1982.

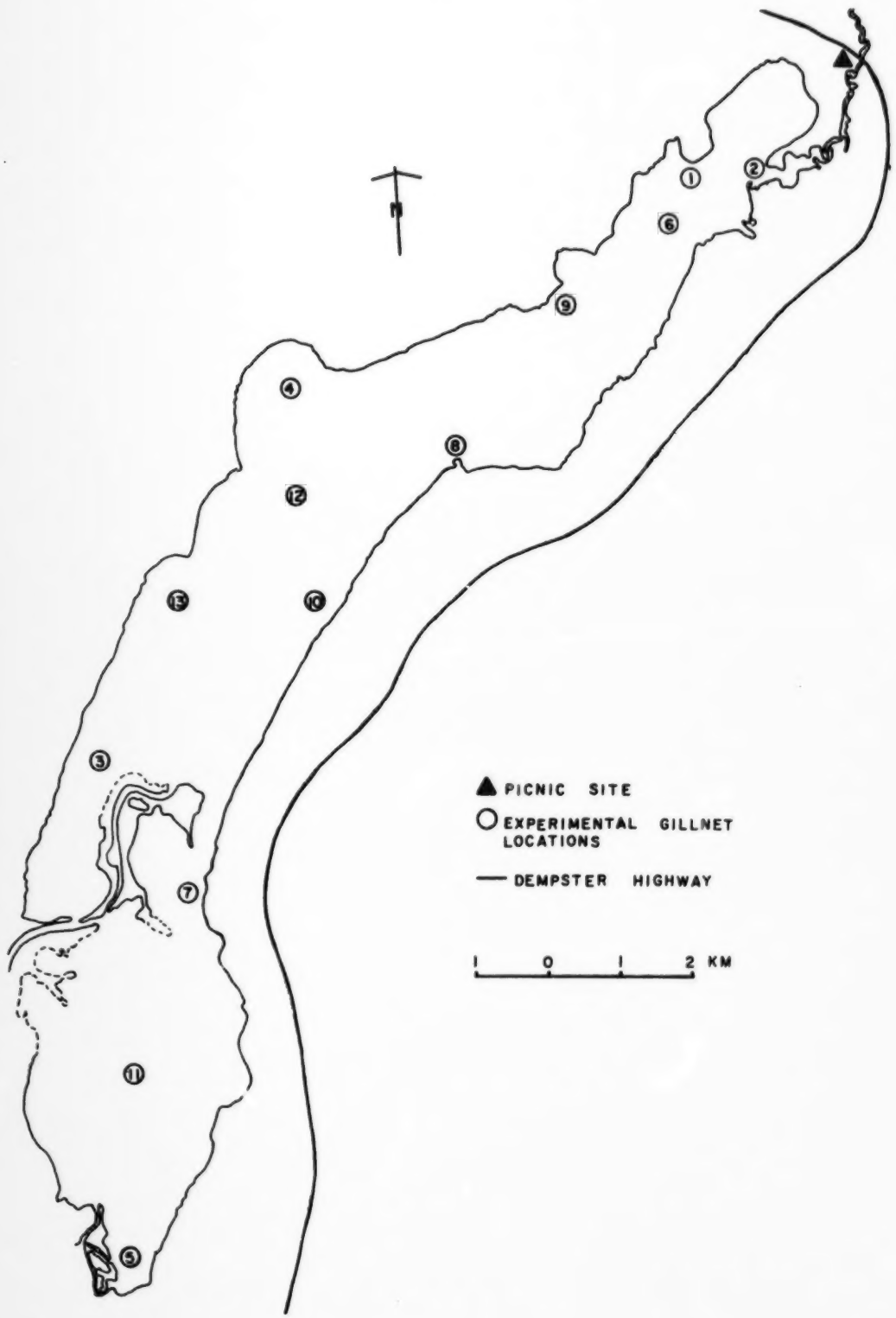

Fig. 4. Map of Campbell Lake showing the experimental gillnet locations and of Campbell Creek showing the sport fishing location (picnic site).

Appendix 1. Summary of information on set depths, set duration and catch per unit effort (CPE) for experimental gillnet sets on Noell Lake, 1982.

Date	Set Number	Set Depth (m) (38mm to 144mm)	Set Duration (h)	Total Catch (kg)	CPE[1]
August 5	1	2.4 - 4.6	24	79	24.8
6	2	4.0 - 10.0	24	76	24.8
7	3	3.0 - 5.0	22	101	22.0
8	4	4.0 - 6.5	22	143	24.2
9	5	4.0 - 10.0	20	52	20.2
10	6	4.0 - 1.5	24	33	10.4
11	7	4.0 - 6.5	22	44	13.6
12	8	12.0 - 7.0	24	155	52.0
16	9	6.0 - 8.0	18	55	29.7

[1]No. fish caught per 100 m gillnet per 24 h.

Appendix 2. Summary of information on set depths, set duration and catch per unit effort (CPE) for experimental gillnet sets on Campbell Lake, 1983.

Date	Set Number	Set Depth (m) (38mm to 144mm)	Set Duration (h)	Total Catch (kg)	No.	CPE[1]
June 27	1	5.0 - 13.5	18.0	17.3	21	11.2
28	2	1.5 - 2.5	20.5	76.4	104	48.7
29	3	4.5	19.0	19.5	14	7.1
30	4	4.5 - 8.0	15.5	11.2	14	8.7
July 1	5	2.0 - 1.5	23.0	47.5	35	14.6
4	6	5.5 - 13.0	25.0	9.6	19	7.3
5	7	1.0 - 4.0	25.0	84.0	69	26.5
6	8	3.0 - 9.0	8.0	38.9	37	44.4
7	9	5.0 - 10.0	3.5	13.5	18	49.4
8	10	6.0 - 8.0	6.5	9.6	15	22.1
10	11	2.0 - 2.5	4.0	16.4	17	40.8
13	12	9.0 - 5.0	5.5	17.2	24	41.9
14	13	3.0 - 6.0	4.0	9.4	9	21.6

[1]No. fish caught per 100 m of gillnet per 24 h.

Appendix 3. A description of the codes used to determine the relative stages of maturity for northern fishes.

FISH MATURITY CODE

Maturity State		Female		Male
Immature (virgin)	1	- ovaries granular in texture - hard and triangular in shape - up to full length of body cavity - membrane full - eggs distinguishable	6	- testes long and thin - tubular and scalloped shape - up to full body length - putty-like firmness
Mature	2	- current year spawner - ovary fills body cavity - eggs near full size but not loose - not expelled by pressure	7	- current year spawner - testes large and lobate - white to purplish color - centers may be fluid - milt not expelled by pressure
Ripe	3	- ovaries greatly extended and fill body cavity - eggs full size and transparent - expelled by slight pressure	8	- testes full size - white and lobate - milt expelled by slight pressure
Spent	4	- spawning complete - ovaries ruptured and flaccid - developing oocytes visible - some retained eggs in body cavity	9	- spawning complete - testes flaccid with some milt - blood vessels obvious - testes violet-pink in color
Resting	5	- ovary 40-50% of body cavity - membrane thin, loose, and semi-transparent - healed from spawning - developing oocytes apparent with few atretic eggs - some eggs may be retained in body cavity	10	- testes tubular, less lobate - healed from spawning - no fluid in center - usually full length - mottled and purplish in color
Unknown (virgin)	0	- cannot be sexed - gonads long or short and thin - transparent or translucent		
Unknown (non-virgin)	11	- resting fish - has spawned but gonads regenerated - sexing not possible		